THE IRON AGE

New York, September 12, 1929

ESTABLISHED 1855 VOL. 124, No. 11

Lacquer Department Conveyorized

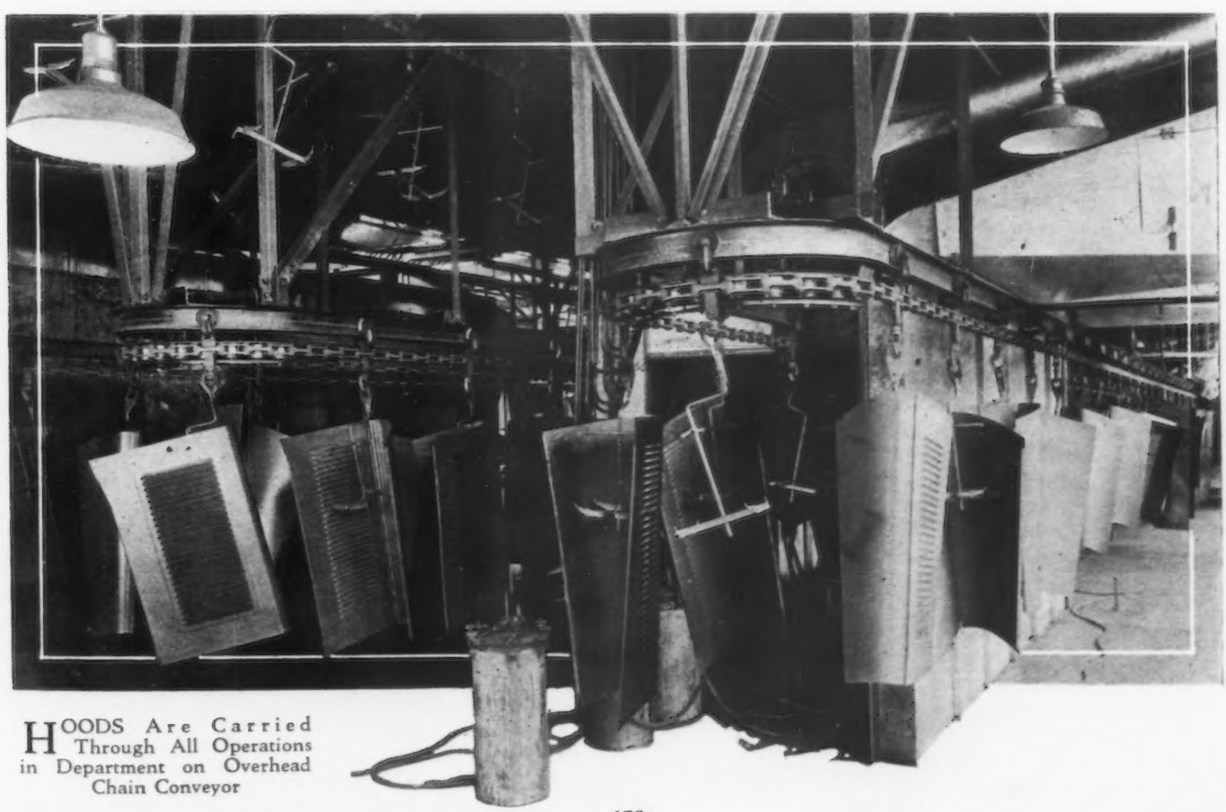
Studebaker Doubles Output, Saves 15 Per Cent on Labor and Reduces Rejections 25 Per Cent by Installing New System

BY BURNHAM FINNEY*

WHEN the Studebaker Corporation decided recently to concentrate all manufacturing activities at South Bend, Ind., it was faced with the necessity of greatly increasing its output there to take care of the volume of automobiles formerly made at Detroit. Instead of constructing additional units at a high cost, it examined ways and means by which operations might be carried on more intensively in its present buildings, and finally decided to install an extensive mechanical conveying system reaching into many departments.

The conveyorizing of the lacquer department was included in the expansion program. By means of the new system, production of hoods in the department has been increased from 400 to 800 in a 10-hr. day and the output of sets of sheet metal parts has mounted from 125 to 350 in the same working period. Concurrently, labor saving has amounted to 15 per cent and rejections have declined 25 per cent.

*THE IRON AGE, New York.



HOODS Are Carried Through All Operations in Department on Overhead Chain Conveyor

Sheet metal parts going through the lacquer department consist of the running board splash apron, radiator splash apron, fenders, gas tank covers and hoods. They are brought from final inspection in the stamping department to the lacquer department on an overhead chain conveyor and there are transferred by hand by two men to another overhead chain conveyor. The department is served by two conveyor lines, one for hoods and one for other parts. Both conveyors are constructed of 4-in. I-beams with steel angle supports. Running on the I-beams are two-wheel trolleys with standard H attachments connected by No. 458 drop forged chain.

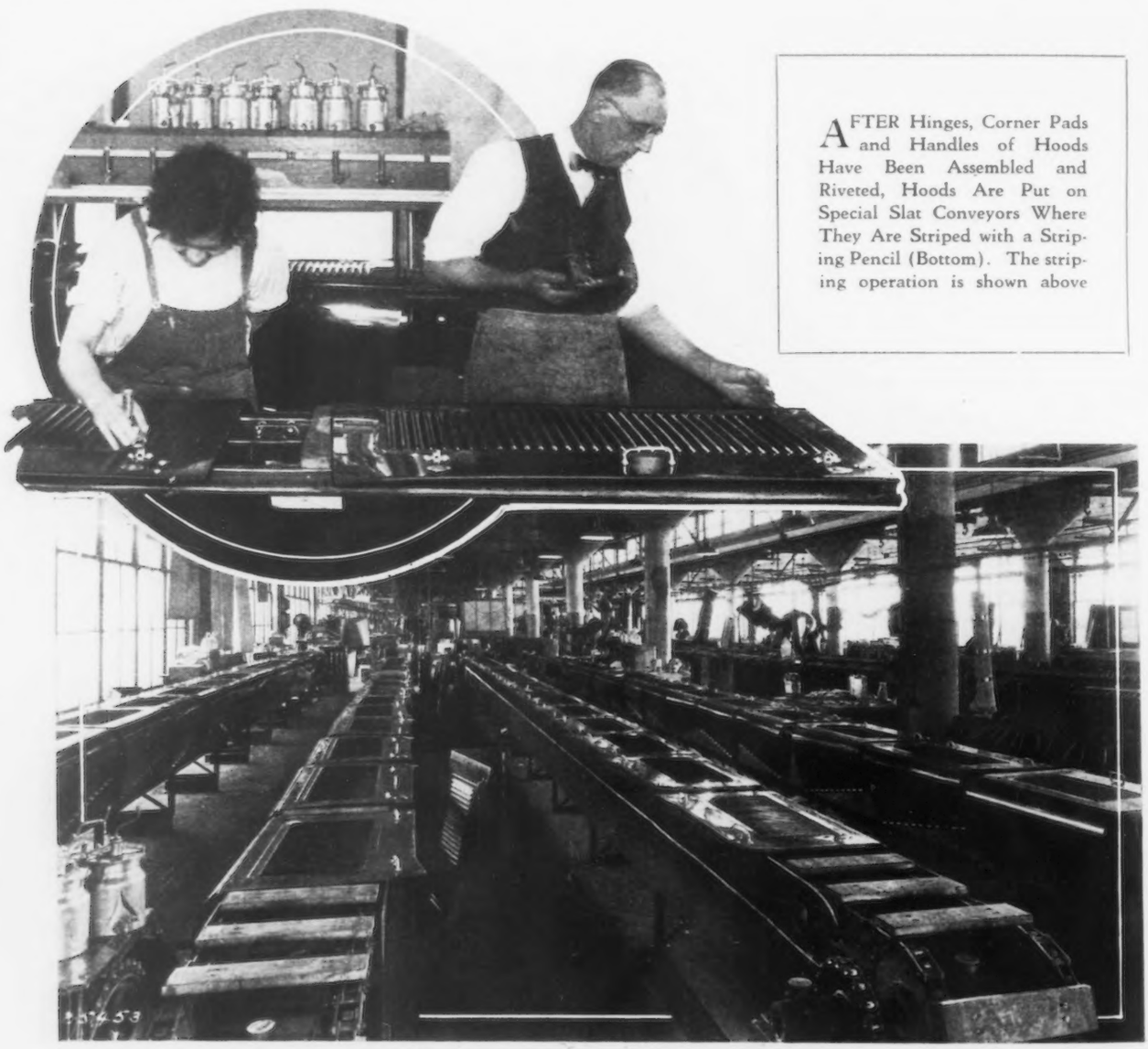
As they move along the conveyor line, the running board splash aprons, radiator splash aprons, fenders and gas tank covers (hereafter referred to as the "fender line") are cleaned with Rex Pamco Reducer to remove spots and are sprayed with Rex Pamco Cleaner to take off all grease and slight rust from previous handling. The spraying booth is an individual unit with an air-agitated pressure tank located outside the booth. The cleaner is forced by air through two hose into the booth, where a workman sprays it on the sheet metal parts.

Fenders Baked in Drying Oven

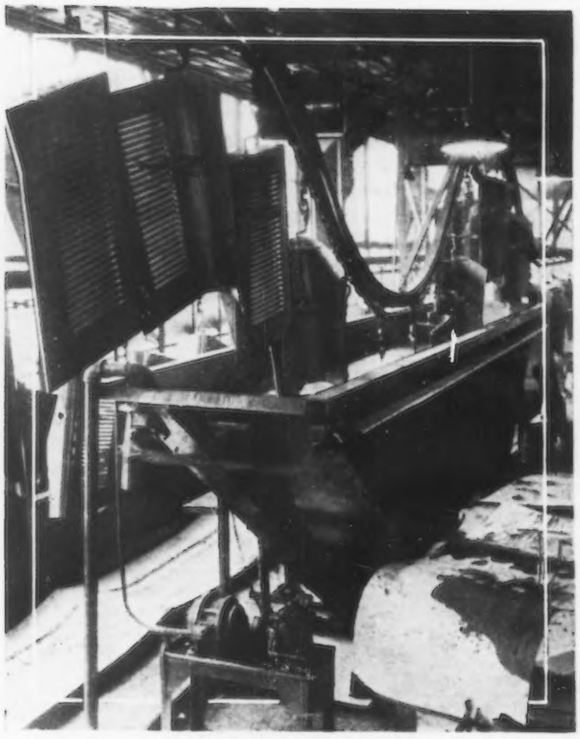
Passing out of the spray booth on the conveyor, fenders are air-dried while moving toward the drying oven, where they are baked from 20 to 30 min. at 400 deg. Fahr. This oven, manufactured by Young Brothers Co., Detroit, is of standard panel design, with the oil heating unit situated in a pent house on the roof of the building. Heat is forced through ducts from the heating unit to the oven and is drawn out there by means of exhaust fans.

In the oven the Rex cleaner flakes on the fenders, so that the first operation after emerging from the oven is the scuffing off of this material. This is done by rubbing the fenders by hand with steel wool, after which they are wiped down with an alcohol cloth to make sure that no rust has accumulated. For spraying the prime coat, fenders are carried through a booth in which the Floco system of automatic shower bath is used. This booth contains a series of shower spray heads, some of which are turned upward and some downward, so that all parts of the fenders have the spray of paint turned directly on them. The spray heads are adjustable to suit local conditions. A number of drain pans form the floor of the booth. Through these pans the paint returns to the storage tank, where it is ready to be pumped again into the Floco system.

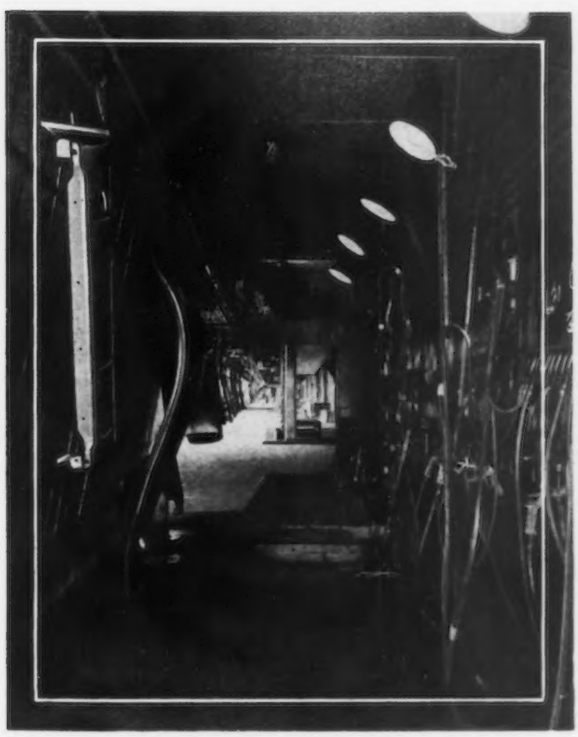
The supply tank for the Floco system is located in a service elevator tower on the third floor. From this tank the material is pumped to a second supply tank, in the sawtooth of the fourth floor, which is of small capacity

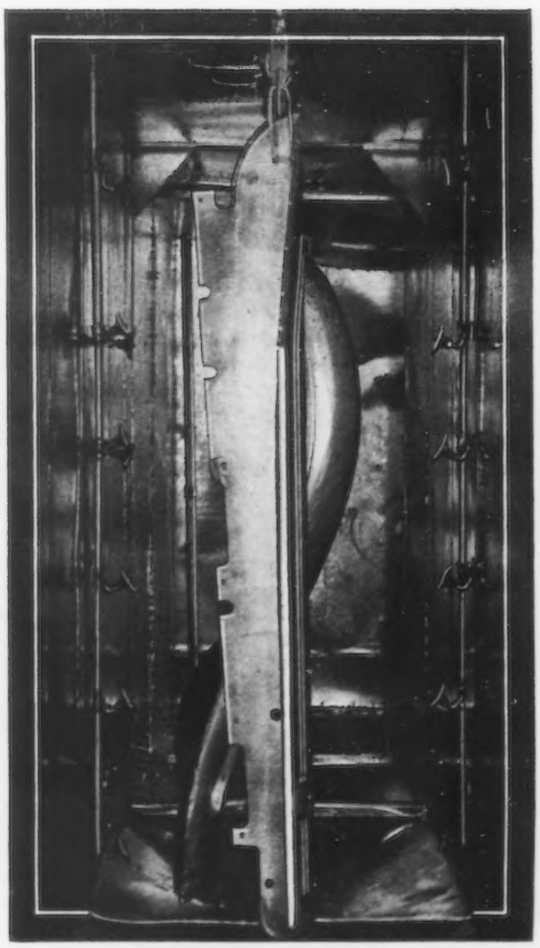


AFTER Hinges, Corner Pads and Handles of Hoods Have Been Assembled and Riveted, Hoods Are Put on Special Slat Conveyors Where They Are Striped with a Striping Pencil (Bottom). The striping operation is shown above



AFTER the Lacquering Operation, Sheet Metal Parts Are Taken from Conveyor, Put on Special Rubbing Bucks and Rubbed Down by Hand with Oil, Pumice Stone and Water (Upper Left). Hoods are dipped in a tank for the priming coat, the paint in the tank being specially agitated at the top and bottom (upper right). Booth in which Rex Pamco cleaner is sprayed on fenders and other parts is individual unit with air agitated pressure tank located outside booth. Cleaner is forced by air through two hose into booth (lower left). Prime coat is sprayed on fenders by Floco System of automatic shower bath (lower right). Booth contains series of adjustable shower spray heads. Several drain pans form the floor of the booth





and is designed to keep the pump constantly primed, thus giving to the spray heads a proper pressure.

Fenders Pass Along Conveyor Bank

Coming out of the Floco booth, fenders pass along a considerable bank in the conveyor for dripping purposes. The bank is in a special glass-inclosed room, offering protection against dust and dirt, where the floor is made up of a series of drip pans. From this room the conveyor leads into a drying oven, where the prime coat is baked on for a period of 2 hr. at a temperature ranging from 370 to 400 deg. Fahr. Coming from the oven, the fenders are cooled for 5 min. and then are lightly sanded. From this point they start a journey through a number of spray booths and drying ovens, during which they are sprayed outside with from six to eight coats of lacquer, are air-dried for 10 min. between each coat, and are oven-dried for 45 min. at 170 deg. Fahr. They are water-sanded, mist-coated and retouched. They are then sprayed inside with black paint, again oven-dried for 45 min. at 170 deg. Fahr., removed from the conveyor for a Parko-Rub, and polished. After being polished, they are hung on a conveyor and are delivered to the final car assembly line, passing en route through a finished stockroom, where they can be removed for storage, if desired.

Hoods go through a similar process, except that they are dipped in a tank for the priming coat, the paint in the tank being specially agitated at the top and bottom. Moreover, after polishing operations, hoods are sent by overhead conveyor to the assembly department, where hinges, corner pads, and handles are assembled and riveted. They are then put on a slat conveyor on which they are striped with a striping pencil. Finally the two halves of each hood are assembled and are placed on an overhead I-beam conveyor to be delivered to the final car assembly line.

Ovens Are Constructed of Wood

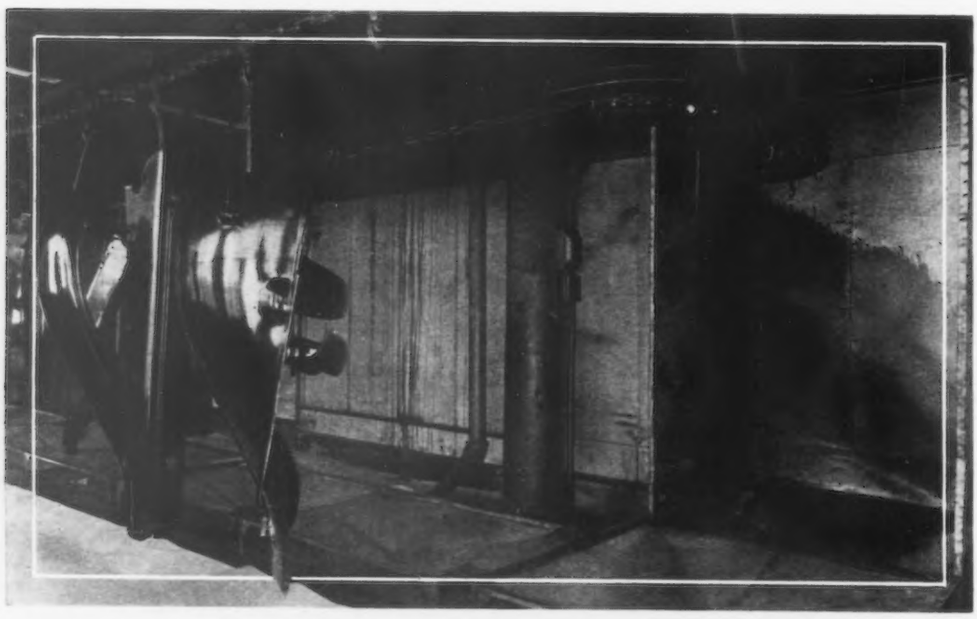
Ovens in which lacquer coats are dried are economically constructed of wood framework with plaster board sides. Since the temperature of the oven never exceeds approximately 170 deg. Fahr., the use of such material is feasible.

After the coat has been thoroughly dried, following the lacquer spraying operation, sheet metal parts are taken from the conveyors by hand and are put on special rubbing bucks. Here they are rubbed down by hand with oil, pumice stone and water. Under each rubbing buck is a drain to carry away the drip or splash of the liquid.

The floor of the spraying booths is a mastic deck with drains connected to a sewer. The mastic deck is composed of material similar to asphalt, which is laid on top of the original cement floor of the booth. With this construction it is possible to wash booths with water and a lacquer remover about twice a week to keep them from collecting a thick layer of lacquer dust. For use in case of fire, booths are equipped with automatic sprinkling heads. In addition, there are two sprinkler heads in the exhaust stack of each booth.

At various points along the conveyor line, and also after final inspection, are repair stations where any work that is scratched or otherwise marred can be removed and put through a special process to restore its original appearance.

The fender painting conveyor is 4608 ft. long and is driven by one 5-hp. motor operating at 1200 r.p.m., with a dual caterpillar drive. The motor is connected to a Reeves Class 1, Type E variable-speed drive, which in turn drives two Jones No. 15 double-type reducers from a common shaft. The ratio of the reducers is 44 to 1. This in turn drives bevel gears directly connected with spur gears with a shear pin coupling to chain sprockets.



COMING Out of Floco Booth, Fenders Pass Along Bank in Conveyor for Dripping Purposes. Bank is in glass-inclosed room the floor of which consists of a series of drip pans

The entire conveying system in the department was designed and installed by the Jervis B. Webb Co., Detroit. The special conveyor for the striping of hoods was supplied by the Chain Belt Co., Milwaukee, and the lacquer mixing equipment is the product of the Binks Spray Equipment Co., Chicago.

For instrument boards, garnish molding and door-panel units, the layout had to be made so that parts could be run in grain, or lacquer or metallic enamel. This was made possible by using the same combination ground color and primer for both lacquer and grain. Complete car sets are obtained within a 3-hr. period. Parts are delivered to the final body assembly line by an overhead I-Beam conveyor carrying crates, each of which contains a complete set of garnish moldings, door panels and instrument board for one car. The layout utilizes 3166 ft. of conveyor, and in 32,248 sq. ft. of floor space 4875 garnish moldings, 2700 garnish door panels and 800 instrument boards are produced in a 10-hr. day, with a production increase of 200 per cent and a cost reduction of 35 per cent.

Uses Universal Heat-Treating Unit

Packard Plant Has Three Furnaces, with Pushers and Pullers Interconnected with Time Controls, Forming One Continuous and Automatic Outfit

BY F. W. MANKER

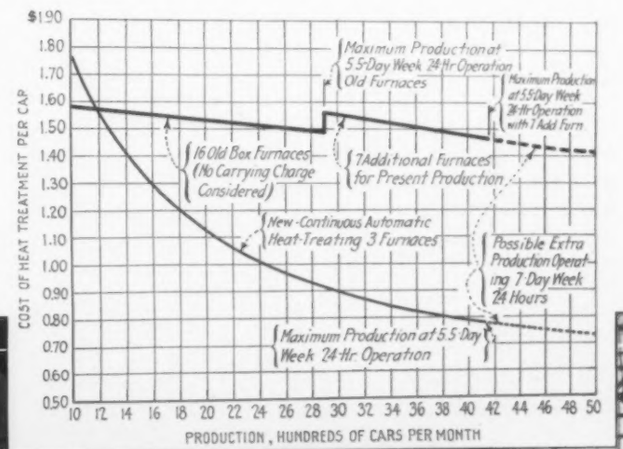
THREE large furnaces and a quench tank, set in a straight line in series, so that the work can pass progressively through each in turn, have been put into operation by the Packard Motor Co., Detroit.

Inter-connected conveyors and automatic temperature controls make this unit continuous and automatic in operation. It can be adjusted for four operations at once—such as normalizing, heating for hardening, quenching and drawing—or it can be divided up so that one class of work can be annealed or normalized while another is being hardened and drawn.

By altering the time cycles and temperatures of the various units, all sizes of work, from small forgings up to large axles, can be treated interchangeably. Parts being treated regularly in this installation include front and rear axles, connecting rods, transmission gears, differential driving pinions, steering knuckles, steering knuckle levers, etc. That, this range in size is possible is due to the fact that a standard grid-type tray, of alloy steel and 14 in. wide, is used to carry the work through the furnaces.

Only two operators are employed, one to load the work on the trays at the charging end of the first furnace and the other to reload as the work comes out of the

COMPARISON of Heat-Treating Costs (Right) by the Continuous Method with Previous Costs Shows the Advantage of the Former at All Except a Very Low Production Rate

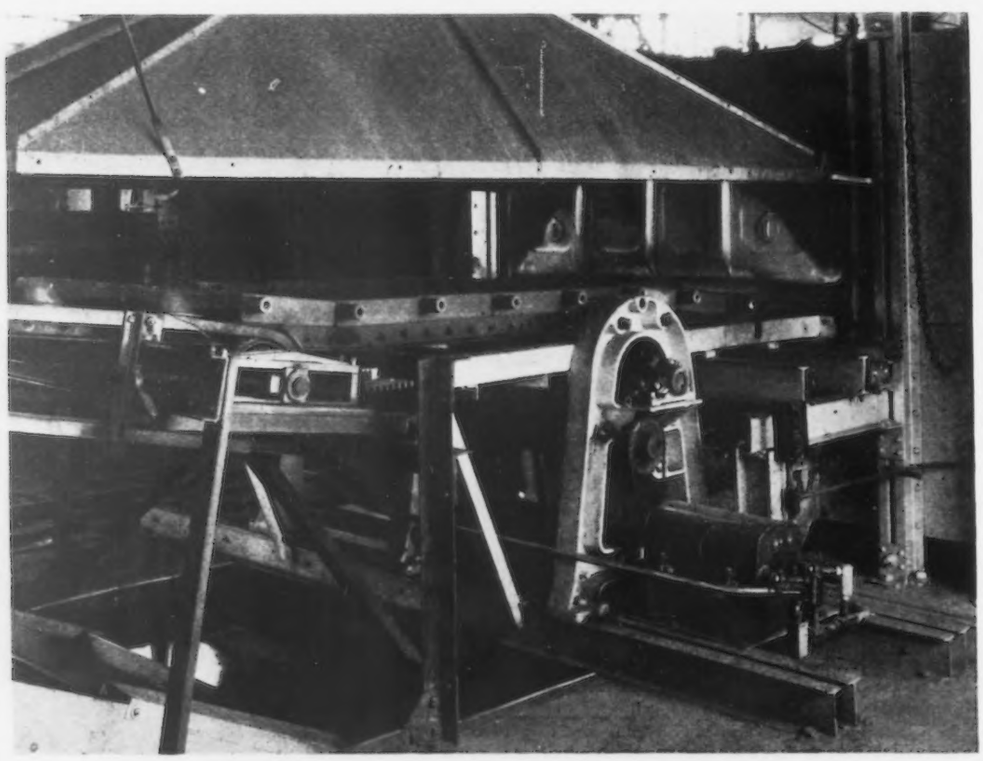

$1.90
1.80
1.70
1.60
1.50
1.40
1.30
1.20
1.10
1.00
0.90
0.80
0.70
0.60
0.50
COST OF HEAT TREATMENT PER CAP
Maximum Production at 5.5 Day Week 24 Hr Operation Old Furnaces
Maximum Production at 5.5 Day Week 24 Hr Operation with 7 Add. Furn.
16 Old Box Furnaces (No Carrying Charge Considered)
7 Additional Furnaces for Present Production
New-Continuous Automatic Heat-Treating 3 Furnaces
Possible Extra Production Operating 7 Day Week 24 Hours
Maximum Production at 5.5 Day Week 24 Hr Operation
10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50
PRODUCTION, HUNDREDS OF CARS PER MONTH

CHARGING End of Normalizing Furnace (Below). At right is the conveyor which brings returning trays to the correct position and drops them to the gravity conveyor which feeds them to the charging table

quench to go through the drawing furnace. The trays are returned, oriented automatically and passed into the first furnace again without further attention.

Packard engineers developed the conveyor system at either end, as well as that between the hardening and drawing furnaces. The furnaces and the remainder of the conveyor system were designed and built by the Surface Combustion Co., Toledo, Ohio. These furnace walls are made of 9 in. of firebrick and 9 in. of insulation and are held together with buckstays.

In cross section each furnace is 6.5 ft. wide and 3.2 ft. high. The first is 22 ft. long and the others 25 ft. The first furnace has eight gas burners close to the discharge end, as this is the most critical point of the heat treating cycle. These fire directly into the heating chamber. At the discharge end are two oil burners firing into tunnels, running the length of the furnace under the hearth, and



OUTLET End of Hardening Furnace, at Right Side of Picture, with Quench Tank Below and Pass-over Conveyor Above It. The slat conveyor for bringing parts up from the quench is at lower left corner

discharging their products of combustion through numerous ports.

By dividing the furnace into three zones—preheating, heating and soaking—a proper heat gradient is obtained. Automatic temperature control is located in each zone and recording pyrometers are provided. Hot gases pass along toward the charging end, giving off their heat to the cold incoming work, moving in the opposite direction, thereby insuring efficient operation.

Waste heat from each furnace is discharged through a vent in the roof, close to the charging end. In the vent is a recuperator. Fresh air for combustion is forced through the coil in this recuperator, heated to some 600 deg. Fahr. and then delivered to the burners.

Inspirators at the gas burners regulate the gas-air ratio. Thus a reducing, neutral or oxidizing atmosphere can be obtained at will, and automatically maintained.

Trays of work are pushed through, by a mechanical pusher, on three alloy-steel rails. This pusher is motor driven, through a bell-crank link drive. The time the work is in the furnace is controlled through the frequency with which the pusher operates, and this in turn is controlled by a Stromberg time clock.

At the discharge end a mechanical puller reaches into the furnace, engages the trunnions of the trays and pulls them forward. This is operated by the same time clock, in series with a relay to correct for the time lag between the two movements. The puller is used because it was not found practicable to put all the load on the pusher.

Work which is to be normalized only is automatically dumped, after passing through the normalizing furnace, on to the normalizing cooling conveyor, pan type. This carries it along and then automatically discharges it, in about an hour, into tote boxes. The trays continue on, so as not to interrupt the cycle for other work. The transfer is made through a chute which drops the work directly on to the normalizing cooling conveyor. To get sufficient clearance for a gravity drop the receiving end of this conveyor commences at a point below the floor. It may be seen coming up through the floor in one illustration.

If, on the other hand, hardening is to follow, the trays travel along the conveyor which bridges the gap between the two furnaces, and into the hardening furnace. This roller conveyor is 22 ft. long, this distance giving the work the proper cooling before it enters the hardening furnace.

As with the normalizing furnace, the hardening furnace is divided into three heating zones, automatically controlled as to temperature. There are the same type pusher and puller. This furnace has ten gas burners and two oil burners, operating as in the normalizing furnace. At the discharge end the work is dumped through a chute into a quench tank. As in the normalizing furnace, any desired heat gradient can be maintained.

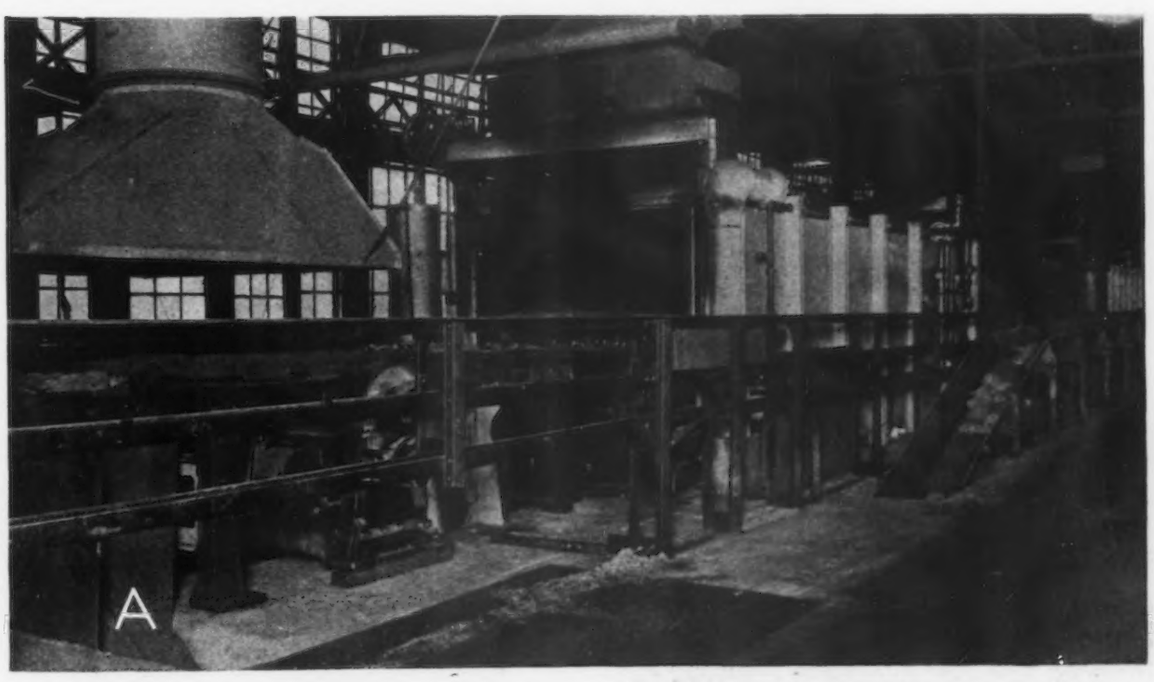
Dumping is done in a unique manner. The trays have a trunnion at each end, on the advancing side, but are supported by the rails underneath. These rails end at

OUTLET End of Drawing Furnace. The 23-ft. dog-chain cooling conveyor in foreground suffices for air cooling. Parts drop from it into tote boxes and are then passed through the cleaning room

the quench chute and the trunnions ride on to another set of rails on the sides of the furnace. As the tray leaves the supporting rails it upsets, swinging by the trunnions from the side rails, and the work drops off into the quench.

At this point the puller reaches in, engages the trunnions, and pulls the tray out on to the rails of the pass-over conveyor, over the quench tank and to the loading table of the drawing furnace and places it in position to receive the work again. The parts are brought up to this point out of the quench by a slat-type continuous conveyor and an operator reloads them into the trays.

The drawing furnace is similar to the others except that it is heated by only two burners. After the work has passed through the proper heat gradient, it is pulled out on to a dog-chain cooling conveyor, 23 ft. long. When finally the tray of cooled pieces is dumped, the work drops into tote boxes for removal to the cleaning room.



DISCHARGE from End of Normalizing Furnace Appears at Extreme Left with Chute (A) to Normalizing Cooling Conveyor. At right this conveyor rises from the receiving position and runs alongside the furnaces

This conveyor then makes a turn with the tray and upsets it on to a single-strand chain conveyor, where it rides on edge and between two guide rails. This conveyor runs the length of the three furnaces and delivers the tray on to a "turn around" conveyor in front of the charging end of the normalizing furnace.

As the tray is tipped over on to this "turn around" conveyor, it lies flat but with the trunnions pointing to the rear. To correct its position the conveyor, which consists of two parallel traveling chains with slats between, makes a complete turn with it and drops it down on to a short gravity conveyor which feeds it to the loading platform of the normalizing furnace.

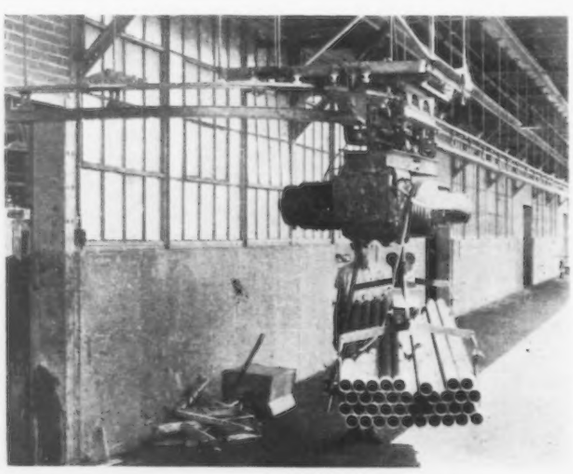
Production has been greatly in excess of that from the furnaces formerly used. The output of this installation is equal to that of 24 box furnaces, and two men only are required, as contrasted with 12 men on the box furnaces. Due to atmospheric control, scaling and pitting has been almost entirely eliminated, and spoilage has been reduced considerably over the entire range.

Handling Steel Tubes into Storage with One Operator

USING a combination of an overhead carrying device and a permanent stacking rack, steel tubes in loads up to 2 tons are handled from unloading platform to storage and from storage to point of use in the plant of the Spicer Mfg. Co., Toledo, Ohio. The system was put in by Cleveland Electric Tramrail, Wickliffe, Ohio.

The permanent stacking rack consists, as one photograph shows, of two U-shaped steel bars for each load handled. The illustrations show 38 tubes in such a rack being taken from the platform alongside railroad car and dropped in position in the storage pile. This method of handling permits intensive use of the storage space, as aisles between loads are not necessary. Tubes of the same size and specification are piled in successive loads, one above the other, and may be removed as needed with the minimum of handling.

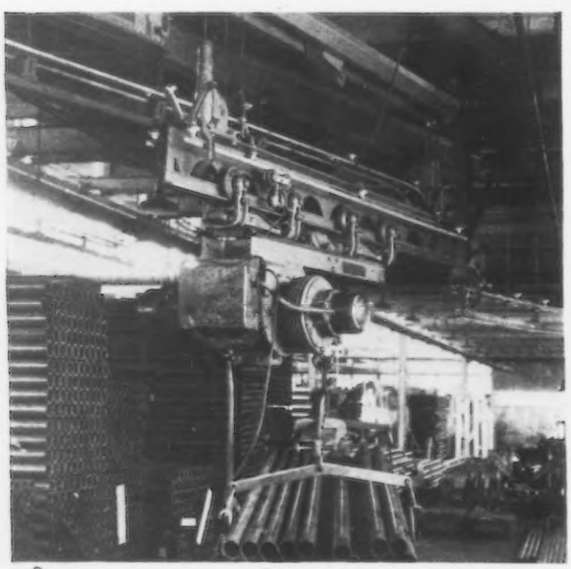
Two men in the railroad car unload the tubing by hand directly into the rack. One operator does all the transporting from that point into storage and again out of storage and into use. He needs no assistance beyond the floor-operated tramrail carrier running over the standard overhead rail system. He can pick up and store a carload of tubing in one-half day, and, depending somewhat upon the distance he has to move the loads, can keep two men in the car busy unloading and stacking on the platform.



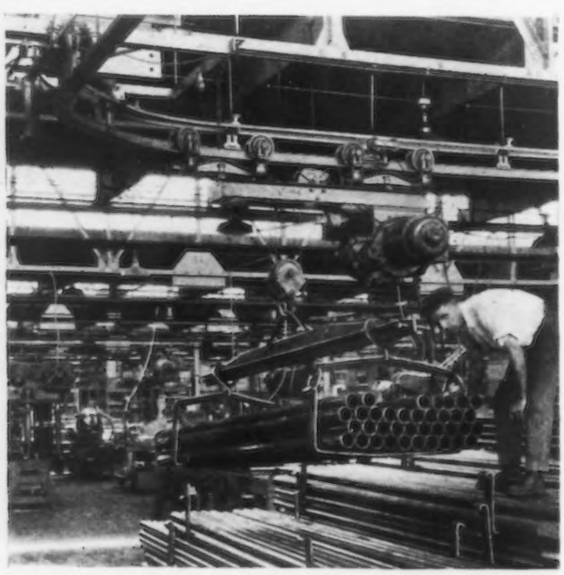
Picking Up a Lift from Incoming Platform

One photograph shows the transfer between the low-level rail used on the platform, which passes through the door, and the high-level rail within the storage and manufacturing building. The section which is raised is operated by push-button control. Safety devices installed on this equipment prevent the load from running off the section being raised and also prevent the load from running over the end of either rail when the connecting system is not in position to receive it. A pin and socket device is used to produce proper alinement between the elevating section and the upper and lower rails with which it functions.

As the doorway through which the load passes from the platform has an automatic fire-door to conform with Underwriters' regulations, the section of track passing through the doorway is fitted with a swinging link which operates automatically as the moving fire-door comes in contact with the throw-out mechanism. This permits the door to be closed—either automatically, in case of fire, or manually, at the end of the day.



Raising a Load from Low-Level to High-Level Track



Depositing a Lift of Tubing on the Pile

Material Handling Applied to Nitrate

Chilean Industry Revolutionized by Labor-Saving Equipment —Twice as Much Nitrate Recovered from Ore with Sharp Cut in Cost

BY STERLING H. BUNNELL

AMERICAN material-handling machinery is successfully replacing labor, even where it is cheap. In the Chilean nitrate industry, Guggenheim Brothers have introduced a completely mechanized and highly efficient system of handling nitrate ore and extracting the nitrate or saliter. The new system is operated by a Diesel-engine plant aggregating 22,000 hp., and all heat in the engine exhaust gases and the jacket water is utilized in warming solutions used in the plant operation. The result, as compared with the Shanks system, which has been in general use without any essential improvement since its original invention long ago, is the recovery of about twice as much of the nitrate contents of the caliche in the ground, with only 30 per cent of the labor, and about 18 per cent of the fuel per ton of nitrate, and a reduction in cost amounting to over $10 a ton.

The story of the great Chuquicamata copper deposit, containing 1½ per cent copper and considered utterly without value some 20 years ago, is generally known. The development by E. A. Cappelen Smith of the Guggenheim interests of mechanical means for crushing and leaching the low-grade rock in enormous quantities made Chuquicamata the enormously valuable mine of the Chile Exploration Co.

Old Practice Wasteful

The nitrate grounds, where more than 100 nitrate plants were operating, many of them at a loss and none with more than a bare profit, invited a similar development. The practice was to break up the caliche rock by hand, haul it to the extraction plant in small railroad cars or mule carts, crush it to 3-in. lumps and load it by hand into shallow iron tanks, where it was flooded with liquor from the previous operation. The broken rock and liquor were then heated by steam at about 40 lb. pressure and the liquor was actively boiled for several hours, until the greater part of the sodium nitrate contained in the caliche was dissolved. The saturated hot liquor was then drawn off into shallow open tanks and allowed to cool for six days, by which time a considerable quantity of the nitrate was crystallized out. The cooled mother liquor was then pumped back to tanks full of fresh caliche, while the wet crystals were shoveled out of the crystallizing tanks, carried to a drying floor, and left several weeks to drain off the excess water.

Waste was evident all along the line; the steam heated tanks were not jacketed, the crystallizing tanks were exposed to the hot sun by day, and the spent caliches or "ripio" still contained about one-third of the original nitrate contents, so that only about 60 per cent of the nitrate contents of the caliche was recovered. Further, only about 75 per cent of the caliche excavated ever reached the plant, the rest being broken fine or otherwise left on the ground. Very slight use was ever made of mechanical methods for handling the crushed rock; and, in contrast with American practice, there seems never to have been a consulting engineer or constructing firm specializing in the improvement of Shanks-system nitrate plants.

Cappelen Smith conceived the idea of constructing a huge nitrate plant, using the identical system that had proved successful in handling and leaching copper ore. On a tract of caliche land containing about 3 square miles, located about 60 miles from the port of Tocopilla in Chile, the Maria Elena nitrate plant was built. The caliche rock is brought to the crusher house in 30-ton railroad cars, and dumped in a revolving car dumper. The rock is crushed successively in jaw, gyratory and Symonds crushers to a size about ½-in., and at the rate of about 16,000 tons a day.

From the crusher house, the material is transported by a long conveyor belt, which discharges by a tripper into a movable vat-filling and spreading mechanism, carried on a cantilever bridge supported on a gantry on railroad tracks, as shown in one of the accompanying illustrations. The loader bridge can thus fill in uniform layers any one of a series of 10 concrete tanks about 100 ft. square by 20 ft. deep.

After filling with rock, the tank is flooded with mother liquor, which is warmed by waste heat from the Diesel engines and circulates through three tanks in succession, until its nitrate content is built up to near saturation. The strong liquor is then circulated through a series of countercurrent coolers, the last of which are refrigerated, so that the nitrate is caused to crystallize out. The cooled liquor returns through the countercurrent coolers, taking on heat from the hot liquor coming from the leaching vats and thus conserving all possible heat energy. The condensers of the refrigerating machines are cooled by liquor requiring to be heated.

New Equipment and Methods Yield Savings

When the oldest of the three tanks in the series gives up the last of its nitrate, it is cut out and a tank of fresh rock is cut in. After draining the tank of mother liquor, the spent caliche is unloaded by grab buckets from two cantilever bridges working together in the same tank. The wet ripio, which contains only 2 to 3 per cent nitrate, is delivered by hoppers in the gantries supporting the unloading bridges to railroad cars and hauled away to a dump. The gantries and tracks supporting the unloading bridges are located on the opposite side of the leaching tanks from the loading bridge and constructed high enough to pass over the latter, so that the operation can proceed in regular order from one end of the row of tanks to the other, returning from tank No. 10 to tank No. 1 at the beginning of the line.

Besides the large rock-crushing plant, leaching tanks and material-handling machinery, the equipment comprises an elaborate system of pipes or valves by which any of the tanks can be connected into the system as required, a pump house with 26 motor-driven centrifugal pumps, the countercurrent coolers, crystallizing tanks, handling

DRAG Scrapers (A) Remove the Overburden of Earth from the Caliche. Mining is by power shovels. The shovels load the caliche into steel cars (D) on the track alongside. Trains are moved by electric locomotive (C) operating by trolley on main lines and by storage battery on loading tracks. Power for the shovels is supplied from portable transmission towers. Jackhammer drilling (B) prepares the caliche for blasting

mechanism, centrifugals and conveyor belts for drying the nitrate and delivering it to the loading platform, ammonia refrigerating machinery, air compressors and a very complete machine shop with iron and steel foundry. The plant proper is more than a mile in length.

Power Scrapers and Shovels Employed for Mining

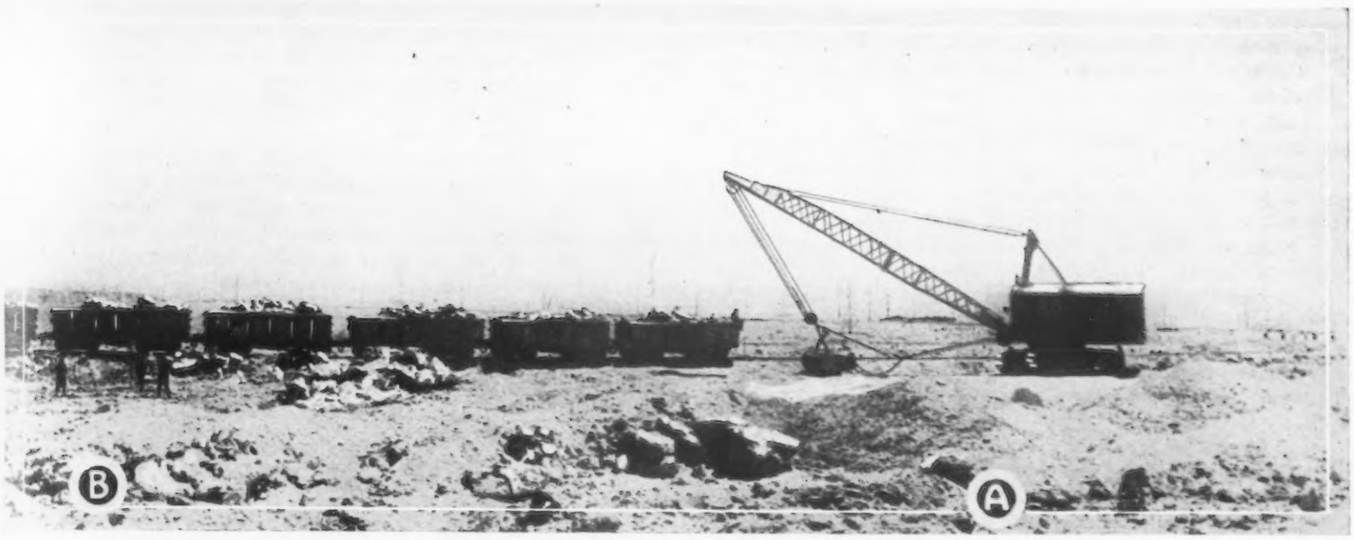
The development by Col. Robert Marsh, Jr., of a successful system of using large drag scrapers and power shovels for mining caliche is an equally important innovation at the Maria Elena plant. The practice of the Shanks plants has been to mine entirely by hand, with some blasting by black powder in hand-drilled holes. The miner piles his lumps of caliche for inspection by an overseer, who makes a crude test of a few pieces by touching them with a smoldering wick called a "mecha," and judging the percentage of saliter by the emission of sparks. Hand mining is an expensive and slow operation, requiring a large number of men, all of whom must be provided with housing at the cost of the plant, as the nitrate region is a desert incapable of supporting life except in such organized industrial communities.

But the application of shovels to caliche mining was not easy. The caliche lies in irregularly distributed layers from one to several feet thick, generally overlain by a stratum of "costra," which is a low grade nitrate-bearing rock, and above that by a layer of "chuca," or fine earth. Below the caliche is found "coba," rock containing no nitrate, and below this is the hard packed earth known as "banco." There may be a thin salt layer above the caliche, and all these layers vary greatly in thickness and distribution.

The only way to ascertain the amount and quality of the caliche is by digging holes through the various layers, and sampling from the sides of the holes; and the methods in use are so uncertain that it is customary to apply arbitrary discounts, or "castigos," to the official test reports, cutting off two or three points from the nominal 20 per cent which is near the minimum for profitable operation by the Shanks system.

Economy in Payroll Pays for Mining Equipment

The mechanical mining operation thus requires the stripping of an irregular overburden of part loose earth, part rock, from an irregular layer of nitrate-bearing rock, generally less than 3 ft. thick, and varying in nitrate content from perhaps 20 per cent at one point to zero in a



test hole 20 to 30 ft. distant, perhaps again showing 20 per cent in a hole farther on. As the power shovel cannot pick and choose its material, but must take it as it comes, it was evident that the grade of caliche recovered by mechanical methods would average much less than the 15 to 20 per cent that would be obtained by individually hand-picking each lump. The shovel, however, would get all the caliche, the good with the poor, while the hand operation left at least 25 per cent in the discard.

The economy of the mechanical mining operation would be enormous, as over 20 tons would be handled per man, against only 2 or 3 tons by hand. Computation showed that in an operation of the magnitude planned the saving in housing and welfare work by reason of the reduction in labor force would amount to nearly $4,000,000, enough to pay for the complete mechanical mining equipment.

The system worked out by Colonel Marsh comprises a rectangular loop of railroad track, crossed by loading tracks which are easily movable. By sampling by test holes with much more care than was ever the practice with hand mining, the depth of the overburden and the caliche are ascertained, and any patches of worthless material approximately located, so that the mining operation can skip them. The overburden, after being loosened by blasting with black powder, using compressed air drills and electric shot-firing, is removed by drag-line scrapers and deposited on the previously worked ground. Following the drag-line scraper, an electric shovel loads the caliche, also loosened by blasting, into steel cars on the loading track alongside.

The cars are moved in trains of six by electric locomotives, operating by trolley on the loop track of the yard tracks, and by storage battery when on the loading tracks. Power for the shovels is carried by overhead electric conductors supported on steel transmission towers on skids. When the caliche has been exhausted from a strip of ground alongside the loading track, the transmission towers are simply dragged, by hitching on a mule, to a new position, and the track is picked up, steel ties and all, in 66-ft. lengths by a suspension frame attached to a drag line hook. Thus in a short time the whole of a loading track may be shifted to a new position, and regular working can proceed over the entire area.

The Maria Elena plant, when put into operation, had

CALICHE Rock Is Brought in 30-Ton Cars to the Crusher House (F). Dumped into a revolving car dumper, the rock is crushed successively in jaw, gyratory and Symonds crushers. It is then transported by a long conveyor belt (G) and picked up by a loading bridge (H), which distributes it in a series of ten concrete tanks (J). Here the rock is treated with hot mother liquor, which, after becoming saturated, is passed through coolers to crystallizing vats. Nitrate stock piles above these vats are shown in upper left. In the middle foreground is a concrete tank partly emptied of spent caliche. In the distance (E) may be seen the workingmen's town

considerable surplus capacity; but the grade of the caliche proved to run lower than expected. The efficiency of the extraction was, however, so good that nearly 90 per cent of the saliter in the caliche was recovered, in spite of the fact that the caliche occasionally ran as low as 8½ per cent in saliter content. It should be noted that the Shanks-system plants become very inefficient with caliche of even 15 per cent content, so that all rock running below 15 per cent is discarded and left in the waste pile.

As the inevitable operating difficulties of a new plant were smoothed out, the output of the Maria Elena plant increased, until it became evident that it would have a capacity of 500,000 tons of saliter per year, and would recover about twice as much saliter from a given area of caliche ground as would be possible with the Shanks system, besides working profitably on material too poor for any Shanks plant.

About 9000 persons form the community at Maria Elena; and this is about one-third the number that would be required to produce the same amount of saliter by Shanks plants, of which it would take four or five of the largest size to equal the output of Maria Elena.

Change of Great Importance to Chile

The completion of the plant, with the successful solution of all difficulties and the expansion of production to double the original schedule, settled all doubts as to the economies effected by the Guggenheim system. The operating managers of Lautaro Nitrate Co. made many visits to the Maria Elena plant and inspected its operations thoroughly. They studied the operating costs and production figures, and became convinced that the Guggenheim system outclassed the best possible Shanks plants. Negotiations were accordingly begun that resulted in the control of the Lautaro Nitrate Co. passing to the Guggenheim interests, and in new financing for immediate construction of a 500,000-ton plant on caliche lands recently purchased by the Lautaro company and not yet developed with a production system.

The wasteful practices in the production of Chilean nitrate hitherto, by which the best spots were mined first and the poor material left untouched, have resulted in the loss of a large proportion of the nitrate in lands already worked, and a corresponding loss to the Chilean Government in revenue that would have been obtained from the saliter. The development of the unworked territory and large plants capable of producing saliter at low cost will be of great advantage to Chile, strengthening an industry that has been operating under great difficulties, and maintaining the revenue of the Chilean Government from the nitrate deposits, which are the principal source of Chile's national wealth.

Importance of Good Steel-Plant Lighting Systems

UNDER the conditions which now obtain in steel plants, according to M. H. Morgan, Jr.:*

1. Good light is cheap—because of great advances in the art of making electric lamps and shades and because of the low cost of electric power to steel plants.

2. Good light is of the essence of safety—because we must be able to see well to be safe.

3. Good light is a powerful aid to production—because men can and will do more and better work when they can see well.

Good light is cheaper in most cases than the very floor it illuminates; it is about the same in both first cost and operation as toilet and janitor facilities. A good interior lighting system may be installed in steel works buildings for from 5c. to 10c. a sq. ft., depending upon the class of work done and the amount of light which that work requires. This system may be maintained and operated for 2c. to 4c. a sq. ft. a year, assuming that it is used 12 out of the 24 hr., which is an average figure.

Exterior lighting is harder to estimate. If existing buildings and poles may be used to support fixtures and wiring, the cost of installation is about half that already given. The intensity used is much less and the operating cost somewhat less than half, because it is practically never necessary to use outdoor lights during daylight, whereas a dark, cloudy day frequently requires artificial lighting of interiors.

Safety Conserved by Good Lighting

Good light is of the essence of safety. Sight is by far the most useful, the keenest and the most important of the senses which inform us of obstacles, moving objects or other impending dangers; and safety most often depends upon quickness of perception of impending danger.

A report of accident causes concerned with lighting is made every few years to the Illuminating Engineering Society by the Travelers' Insurance Co. In 1910 the report showed that 23 per cent of industrial accidents were due to inadequate or improper lighting; in 1918 the figure was 10 per cent; in 1928 it was still 15 per cent, in spite of the vast improvement effected in lighting systems.

Better Output Where Lighting Is Good

A distinct gain in production is the usual result of increasing the illumination, in plants of almost every kind, from "fair" to that of the present standards. A reduction in the amount of "seconds" produced, and less spoiled material due to the workman's greater sureness of eye and lessened tendency to make mistakes, is also a usual secondary result. This conclusion is the result of tests made during the past five years upon shops and even entire plants before, and again after, bringing the lighting up to present standards.

These tests were conducted in some cases by the management of the plant; in others by the National Electric Light Association or the lamp manufacturers. The number and variety of tests, the fact that they come from so many different sources, and their substantial agreement show that the tendency toward increased production and increased accuracy of work with bettered lighting is a real and a forceful one. I quote below from several such reports:

Character of Work	Light Intensity		Increase in Production
	Old	New	
Making babbitted bearings	4.6	12.7	15 per cent
Heavy machine work	3	11.7	10 per cent
Manufacturing piston rings	1.2	18	25 per cent
Inspecting roller bearings	5	20	12.5 per cent

A good steel mill lighting system will have certain recognizable qualities, chief among which are:

1. Adequate intensity of light.
2. Freedom from glare——uniformity.
3. Provision for cleaning.
4. Provision for turning lamps off or on singly or in small groups.

*Electrical engineer, Carnegie Steel Co., Edgar Thomson plant, Braddock, Pa. From a paper before Association of Iron and Steel Electrical Engineers.

Classes for Open-Hearth Furnacemen

Instruction on Important Phases of Steel Making Given at Six Months Intervals Pays Big Dividends in Improved Furnace Efficiency

BY MARTIN J. CONWAY*

MARTIN J. CONWAY

ABOUT 18 months ago some careful computations were made to contrast the estimated cost of various kinds of fuel in the open-hearth department of the Lukens Steel Co. We have 18 basic furnaces with total rated capacity of 1350 tons, and six smaller acid-lined furnaces (total rated capacity 240 tons). Up to the time of the investigation these had been fired with gas made in a battery of 52 stationary producers, using western Pennsylvania bituminous coal.

It appeared that large annual savings, running into six figures, could be made by the use of the heavy oil available at refineries at Marcus Hook, Del., the residue after distilling gasoline and lubricating oils from crude petroleum. This was to be delivered by motor truck and trailer via 35 miles of improved highway. (It may be remarked in passing that this method of transport has proved entirely satisfactory; several trucks, each with trailer carrying 120 bbl. per load, are in service. Costs are materially lower than the railroad freights—whether the latter are much too high is another question.)

Classes Instituted to Facilitate Change to Fuel Oil

From an engineering standpoint the change from gas to oil was not without difficulty. From an operating standpoint there were many chances for trouble, for none of the first helpers or melter foremen had ever run furnaces with oil fuel. It would be easy for a workman to melt down the furnace ports with the short, sharp flame, thus causing greater expense in refractories than the anticipated savings in fuel.

To avoid such untoward developments, the management approved our proposal to institute a training course for open-hearth operators. We were to meet on a certain afternoon each week, immediately after change in shifts. Melter foremen and first and second helpers for the entire plant came, on their own time, to a convenient and quiet corner of the storeroom, where benches, blackboard and other equipment were provided. Owing to rotation of shifts the instructors, who included the open-hearth superintendent and the fuel engineer, went over the same ground three times in succession, and devoted one hour each week to the actual work of instruction (although many hours were necessary for preparation). Each man came once every three weeks until four lessons were given. In all 12 weeks were required.

*Fuel engineer, Lukens Steel Co., Coatesville, Pa.

Model of Furnace Used to Advantage

Aside from a careful consideration of the topics to be discussed and the method of conveying somewhat technical information in terms the workmen could understand, the principal work of preparation consisted of building a scale model of the furnace, blocks, chambers, flues and valves. This was done by the pattern-making apprentice, and the views show it to be a creditable job. The roofs of furnace and chambers can be removed, so the interior shape and construction of the hearth and checkers can be observed. The blocks are also sectionalized so that the relationship of ports, downtakes and slag pockets can be studied. One end of the furnace was built to illustrate the prevailing conditions with gas firing; the other end represented the way the new oil fuel would be used.

This model proved to be invaluable. Most furnace men think that all there is to their furnace is above the charging floor—what they see in their daily work. Many of them, if they think of the checker work at all, think vaguely that it is part of the foundation, just under the hearth. Few indeed would be able to visualize the various flue connections, and be able to tell *why* certain changes should be made in the valves, flues and checkers to correct a definite condition in the hearth.

After the "training course" had been organized and properly advertised all the men fell into the spirit of it promptly. Absences were rare. Close attention and active discussion was the rule.

Ordinarily I would talk extemporaneously for about 20 min., covering all the points in an outline before me. Then the open-hearth superintendent would take about an equal length of time, developing certain phases of the subject in shop language, and illustrating his points with incidents which occurred recently in the department. Finally the meeting was open for questions, either from the floor or from the plant question box.

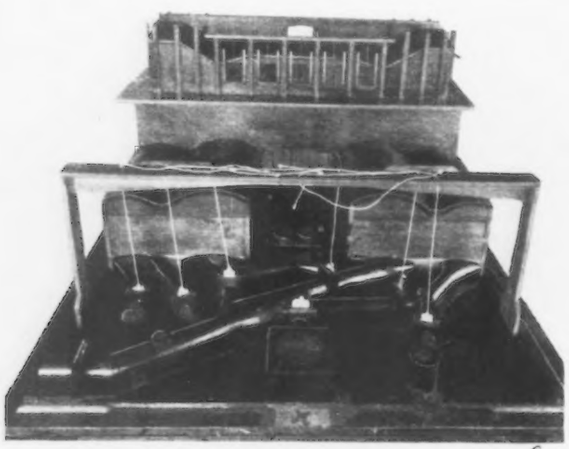
At the end of the fourth lesson, each man was given a copy of the lecturers' notes, neatly bound in a folder, and a group of photographs of the model.

Improves Efficiency of Entire Plant

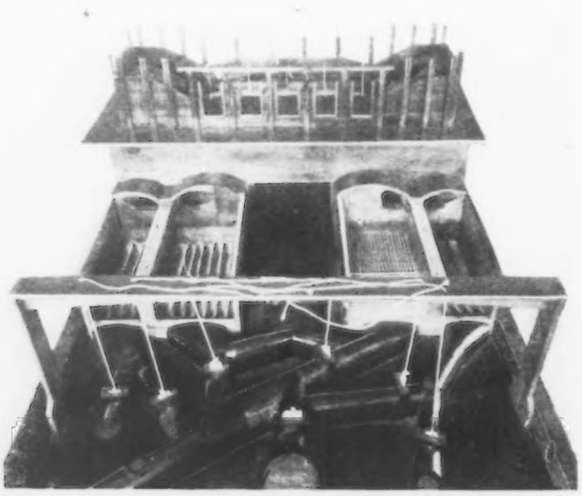
Results have been gratifying, even if hard to measure in dollars. The principal object was achieved, in that the change from gas fuel at 2-in. pressure to oil at 100-lb. was made without difficulty of any sort. Of course the oil was put on one furnace at a time, after the superintendent could be sure that the melters were handling the situation properly. But the whole operation of the department took on a different tone. Minor troubles were less frequent, the average time per heat was materially less, the consumption of ore and pig iron at the finish was cut down, and the maintenance charges lowered.

Summing up, the expected economies of oil-firing were realized, even exceeded. As a result it was decided to continue the course of instruction, and this has been done

at intervals of six months. The broad outline of the course remains unchanged, in order to care for new employees, but emphasis is placed on phases which the plant records show need attention. For instance, in the last course, particular attention was given to bad bottoms, to



WOODEN Model of Open-Hearth Furnace Is Sectionalized so Interior Form and Construction Can Be Studied



accidental alloy in skelp steel, to proper manipulation of ingot iron heats, and to the economies of melting to the correct carbon, neither high nor low.

Outline of Original Course

Lesson I—Furnace Construction:
1. Furnace buckstays and bindings
2. Construction of hearth; importance of tap hole
3. Walls and doors
4. Roof
5. Blocks; bulkheads, ports (gas vs. oil), slag pockets
6. Rearrangement of downtakes for oil firing
7. Regenerators; function, size, construction
8. Flues and valves

Lesson II—Furnace Operation:
1. Starting a cold furnace
2. Making bottom
3. Duties of first and second helpers
4. Qualifications of first class melter foreman, first helper, second helper
5. Repair of furnace between heats
6. Order of charging
7. Working period
8. Judgment of temperature
9. Tapping the heat

Lesson III—Making the Most Steel with the Least Fuel:
1. Low fuel efficiency of the open-hearth process
2. Improving efficiency by
   a. Improving quality of fuel
   b. Increasing furnace output
   c. Burning fuel completely and cutting down stack temperature
3. Discussion of principles of combustion
4. Nature of producer gas and fuel oil
5. Atomizing fuel oil
6. Factors for success in use of fuel oil
7. Influence of checkers:
   a. Cleanliness
   b. Period of reversal

Lesson IV—Reactions and Temperature:
1. Oxidation during melting stage
2. Slag formation with lime, magnesia and silica
3. Manganese and sulphur
4. Fixing phosphorus in the slag
5. Ore and lime boil
6. Carbon elimination and its effect on slag
7. Function of addition; efficiency or recovery.

Slight Adjustment to Coupling Causes Failure in Crankshaft

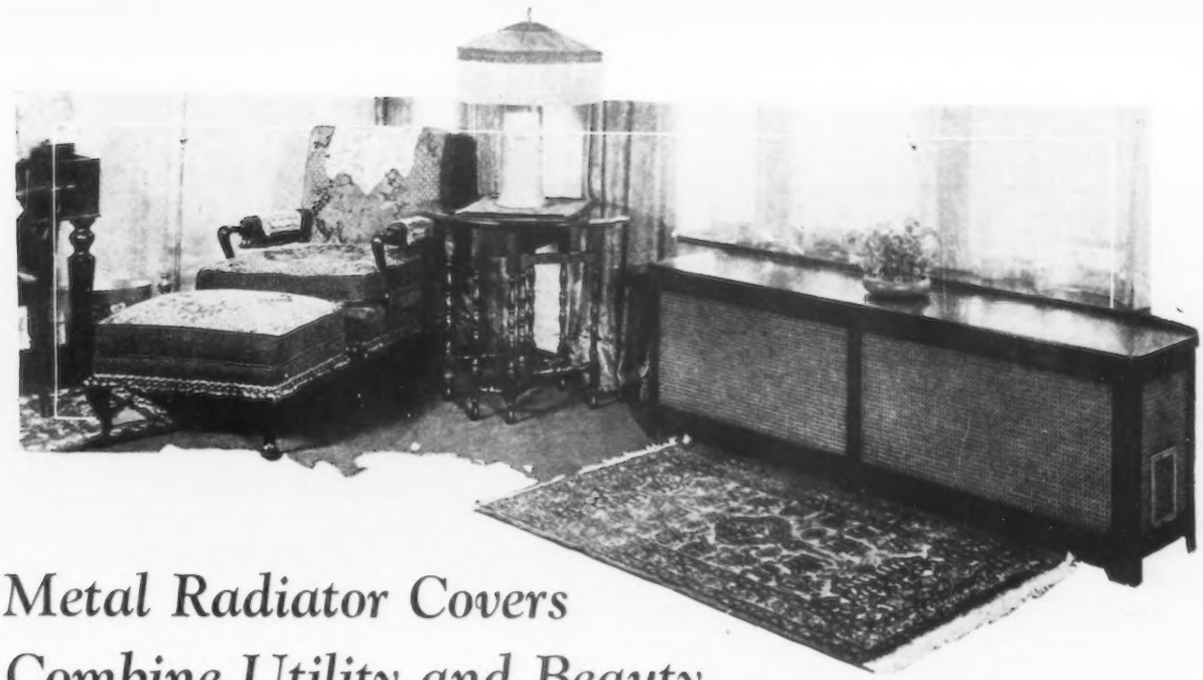
It will be recalled that the second flight of Graf Zeppelin toward America nearly resulted in disaster through crankshaft failures in two of the engines. At the time the trouble was attributed to the fact that superchargers were installed after the first successful transatlantic flight. Tests have been made on these engines at the German Testing Institute for Aircraft at Berlin and, with the assistance of a Geiger torsiograph, it was discovered that, when the rigidity of the crankshaft coupling was adjusted to a certain value, torsional oscillation of the crankshaft occurred at the regular working speed of the engine. It was demonstrated that a relatively small alteration in the rigidity of the coupling made previous to the second flight had been sufficient to bring the critical speed within the range of the working speed.

Bending Tests on Concrete Reinforcing Bars

A bend test machine has been developed at the Bureau of Standards, in which bars of various sizes and shapes appear to undergo approximately the same strain when bent through the same angle. With it tests were made on concrete reinforcing bars.

Unusual tests for this class of material consist in bending the bars, without heating, through 90 to 180 deg. with a radius of bend equal to 1, 2 or 3 diameters of the bar. The angle and radius of the bend depend generally upon the size and hardness of the bar. It seems that the tendency is to suit the specification to what the bars of different grade will meet successfully rather than to the service demanded of the bars in bending for use as reinforcement.

In the tests made on bars purchased in the open market at the bureau, those which did not break in the cold-bend test were not seriously affected as to strength by the bending. The apparent yield point in the bending test was much higher than the yield point determined in direct tension test. The impact test used gave an approximate measure of the yield point of the bar, but none of the bars broke in the impact test except a few which had been quenched in water from a high temperature.



Metal Radiator Covers Combine Utility and Beauty

BY J. B. NEALEY

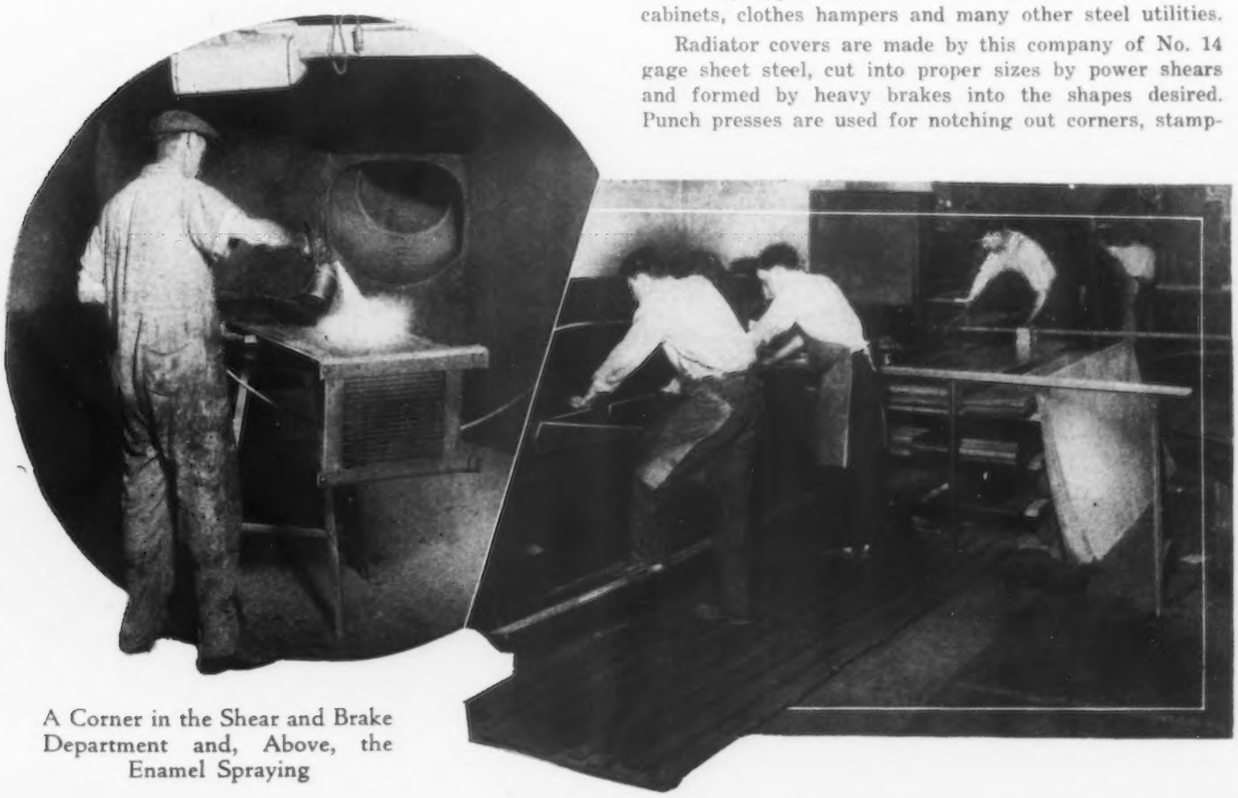
WHILE steel is essentially utilitarian, many markets have been won and there are others that could be won by combining the utilitarian with the beautiful.

The manufacture of metal radiator covers is an example of a large market that has been created by combining the practical with the merchandising factor of attractiveness.

At the outset, as well as now, these covers were designed to conceal the obtruding radiator, and sometimes to include a humidifier for the air and to eliminate wall smudge, but it was necessary to beautify them in order to sell them. So far has this idea been carried out that the schemes of interior decoration, woodwork finish and wall color treatments of individual homes and buildings comprehend harmonious designs and colors in the radiator covers.

While today there are many manufacturers of metal radiator covers, the industry is only 10 years old. One of the pioneers is the Art Metal Radiator Cover Co., Chicago, which, in addition to holding a major place in this field, is prominent in the manufacture of bathroom cabinets, clothes hampers and many other steel utilities.

Radiator covers are made by this company of No. 14 gage sheet steel, cut into proper sizes by power shears and formed by heavy brakes into the shapes desired. Punch presses are used for notching out corners, stamp-



A Corner in the Shear and Brake Department and, Above, the Enamel Spraying

ing out small sections, flanging, etc. Parts are welded by spot and oxy-acetylene processes.

All orders are grouped into schedules according to finish, wood grain, marble, plain color, inlays, etc., and any one of these schedules may carry from 50 to 250 different kinds of finishes. Any one unit may have as many as 12 coats of enamel.

As rust is detrimental to finishes, all steel is covered with oil, which must be completely removed before the finish is applied. Washing in naphtha removes most of the oil, the remainder being taken off by mechanical sanders. The prime coat must be elastic enough to absorb any oil that may be left. The cost of cleaning some of the grilled panels, it is stated, ofttimes amounts to 10 per cent of the total cost.

The prime coat and succeeding coats and enamel are sprayed on, a long line of booths being provided for this purpose. Each coat is then baked in specially constructed gas ovens, after which the coat is hand rubbed and smoothed. The baking process is one of the most intricate in the entire process as the colors will vary with heat and time. When the proper heat cycle is determined for the work in hand, it is carefully noted and faithfully followed for the rest of that order.

Seven gas-fired ovens are employed, each 15 ft. long, 12 ft. wide and 8 ft. high. Swinging doors are provided in front, and the work is charged on racks mounted on trucks. Temperatures used vary from 250 to 800 deg. Fahr., and there is also a wide range of heating periods.

A machine shop is maintained for the making of all tools, dies, jigs, etc. In preparing for the manufacture of a recent model, it was necessary for the shop to make more than 50 dies, which is indicative of the important part such a shop plays in work of this kind.

Superheating Cast Irons Shows Varying Improvement

A SERIES of tests has recently been reported in which the physical properties of a number of cast irons were compared after each iron had been subjected to three different degrees of superheat. The original article was entitled "Die Überhitzung von Gusseisen," by Peter Bardenheuer and K. L. Zeyen, and was published in *Mitteilung Kaiser Wilhelm Institute für Eisenforschung*, No. 130, Düsseldorf, Germany.

Higher Carbon Irons Are Improved

In general it was found that, with normal silicon content, the higher carbon irons showed an improvement in properties as the superheat was raised from 1365 to 1480 deg. C. and finally to 1605 deg. C. Irons with less than 3 per cent carbon showed no improvement or a definite impairing of these values.

Low-carbon irons may, however, be made susceptible to superheating by using high-silicon contents, or by adding part of the silicon as powder in the ladle. Addition of alloying elements such as chromium also increases the tendency towards improvement on superheating.

High-Frequency Furnace Used

In making the tests, a high-frequency induction furnace was used to melt and superheat the metals. For each sample a period of 15 min. was allowed at the superheating temperature, after which it was poured into a ladle and cast at about 1350 deg. C. into rods for test bars. All the bars were cast in dry sand molds. A few of the many reported results are here reproduced.

Melts No. 1, 2, and 7 illustrate the difference between the high and low-carbon irons. No. 10 brings out the effects of adding half the total silicon in the ladle and No. 14 shows a melt of very high-silicon iron. Both improve on superheating. In melt No. 18, 0.39 per cent Cr. was added, replacing Mn. In spite of the low silicon, this iron is considerably bettered by the high temperature.

Results of Superheating Cast Iron

Melt No.	Superheat, Deg. C.	Bending Strength, Lb. per Sq. In.	Deflection, In.	Tensile Strength, Lb. per Sq. In.	Analysis, Per Cent C	Si	Mn
1	1365	58,700	0.57	33,400	3.44	1.10	0.87
	1480	65,300	0.61	34,400	3.34	1.21	0.88
	1605	67,500	0.38	40,900	2.79	1.82	1.05
2	1365	76,700	0.59	44,300	3.03	1.33	0.87
	1480	68,500	0.50	37,700	2.97	1.41	0.92
	1605	63,500	0.35	39,100	2.80	1.60	0.89
7	1365	82,500	0.45	40,900	2.59	2.28	0.93
	1480	73,000	0.35	43,000	2.57	2.29	0.97
	1605	70,500	0.36	46,600	2.61	2.28	1.01
10	1365	60,400	0.41	35,500	2.79	2.38	1.05
	1480	60,000	0.37	35,000	2.73	2.37	1.04
	1605	78,500	0.43	43,600	2.81	2.54	0.91
14	1365	57,100	0.28	39,400	2.52	3.85	0.94
	1480	60,600	0.35	39,200	2.54	3.84	0.96
	1605	72,500	0.35	38,200	2.57	3.72	0.93
18	1365	55,400	0.41	34,500	3.22	1.84	0.55
	1480	60,200	0.43	34,800	3.17	1.77	0.51
	1605	69,500	0.47	40,700	3.16	1.81	0.57

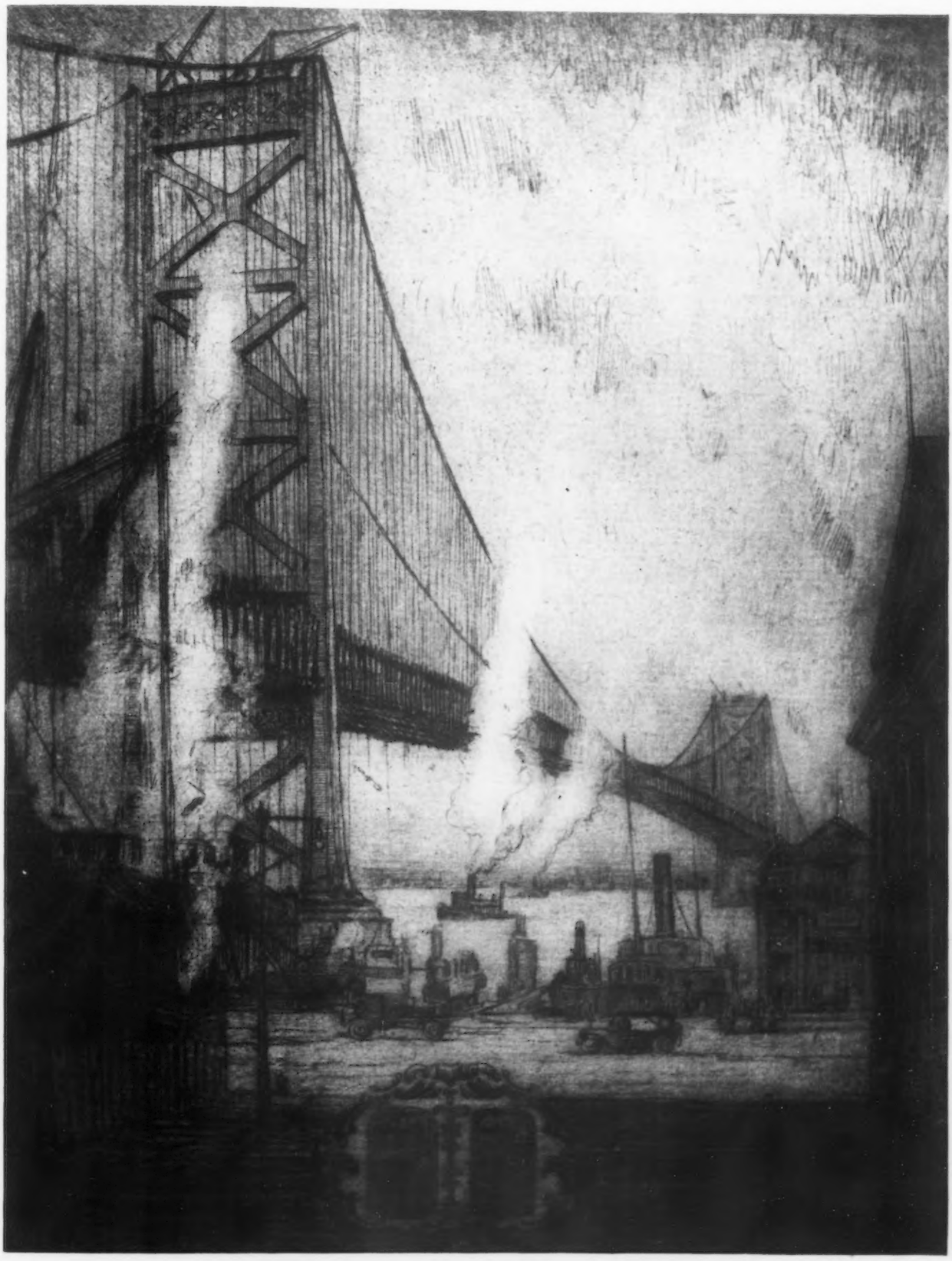
Promoting a Dendritic Structure Harmful

In explanation of the findings, the theory is advanced that anything which tends to promote a dendritic structure is harmful. Presumably, at the high temperature employed, all of the graphite will be dissolved. Consequently when the iron cools, there is more of a tendency for undercooling than would be the case were there a few graphite nuclei present in the liquid. Opportunity is thus given for the sudden formation of fairly large dendrites with an interstitial network of finely divided graphite and ferrite. The purpose of adding silicon or of raising the silicon content with low-carbon irons is to increase the tendency for the regular precipitation of graphite on solidification.

Great Britain Controls the Chromium Supply

The source of all commercial chromium is the mineral chromite. Commercial chromite, however, contains from 35 to 55 per cent Cr_2O_3, the lower grades being used for refractories and the higher grades for steel making and in the chemical industries.

In the early part of the nineteenth century Maryland was the world's most important source of chromium. From 1860 until 1903 Turkish ore dominated the world market. Turkey was supplanted by New Caledonia in the period from 1903 to 1913, and, since the war, Southern Rhodesia has been the principal producer. The rapid development of the deposits in the Transvaal in the past two years provoke some speculation as to whether or not the Union of South Africa will some day surpass Rhodesia. Irrespective of the relative positions occupied by Rhodesia and the Union of South Africa, the British Empire will control the world market for many years, says "Mineral Industry, 1928."



BUILDING THE PHILADELPHIA AND CAMDEN BRIDGE

Etched by F. Townsend Morgan, President, Morgan Steel Co., Philadelphia. Reproduced in The Iron Age by Courtesy of Albert Catterall, Secretary, Oliver Brothers, Inc., New York.

Roller Bearings Put on Old Mill Motors

Use of Oxy-Acetylene Cutting and Arc Welding in Altering Motors for Standard Bearings

BY J. L. BROWN*

SOME more or less successful attempts have been made to put roller bearings in existing mill motors without conforming to the "300 series" adopted as standard by agreement between the Association of Iron and Steel Electrical Engineers and the roller bearing manufacturers. This standardization, intended to apply primarily to future motor designs, has the obvious advantages of interchangeability as between various makes of roller bearings, simplification of manufacture and reduction in the number of spare parts, but its greatest efficiency cannot be realized unless it can be made to apply to existing designs and bearing change-overs in existing motors. The following paragraphs with accompanying cuts show clearly and in detail how this may be accomplished with a minimum of effort by the use of oxy-acetylene cutting and arc-welding. Fig. 1 shows the end of one half of a mill motor frame of average size opened to display the interior form of the bearing housings. By comparing Fig. 2 with Fig. 1, it will be seen that the central support or web has been cut away. This web is used in the sleeve bearing design to support the inner end of the bearing. This cutting is done to each of the four half-housings by means of the oxy-acetylene flame. The total cutting time per frame to remove the webs and other irregular projections which might interfere with the roller bearing cartridge was 2.5 hr.

The necessary welding additions to the housings were made in 14 hr. The frame interior with welding additions in place is illustrated in Fig. 3. The comparatively thin inside web of the original housing has been built up to form a substantial support for the inner end of the roller bearing cartridge.

After the final machining, which required 3 hr., the interior of the frame appeared as in Fig. 4, permitting assembly of the roller bearing cartridges as they appear in the complete motor assembly, Fig. 5.

Only a few years ago the modifications described and illustrated here would have seemed very difficult, but with the rapid development that has taken place in recent years in steel fabrication by the electric arc and oxy-acetylene flame, the necessary modification becomes only an average job when adequate working drawings are available.

Fig. 1

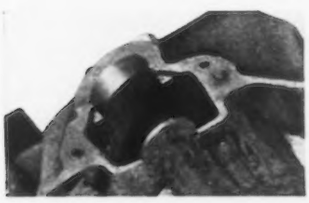


Fig. 2

Fig. 3

Fig. 4

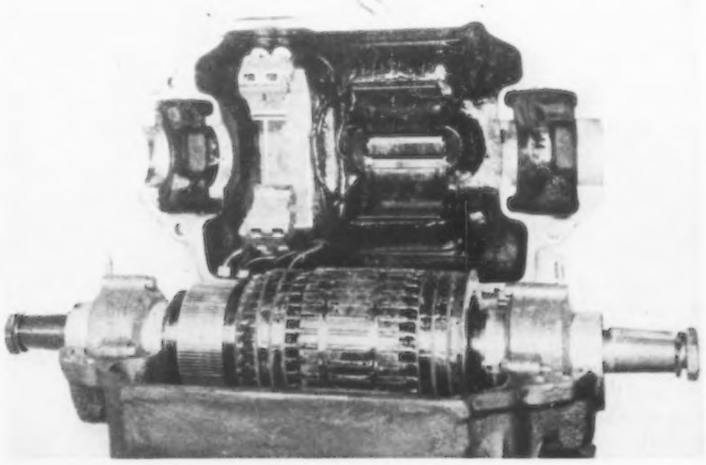


Fig. 5

Fig. 1.—Old-Type Housing with Central Web
Fig. 2.—Central Web Cut Away
Fig. 3.—Extra Metal Welded On
Fig. 4.—Housing Machined
Fig. 5.—Motor Reassembled with Its Roller Bearings

*Industrial motor engineering department, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Lewis-Shepard Co. Acquires Plant in Indiana

The Lewis-Shepard Co. announces the purchase of a brick manufacturing building containing approximately 60,000 sq. ft. of floor space at Crawfordsville, Ind. Instead of putting up additional buildings at Watertown, Mass., the company has decided to operate the branch factory at Crawfordsville, to serve customers west of Cleveland. It is expected that production will be well organized at Crawfordsville by Oct. 1.

The Lewis-Shepard Co. was incorporated in 1915, and since that time has expanded its manufacturing area six different times. At the outset the Crawfordsville plant will manufacture chiefly skid platforms for lift trucks and storage racks for use with portable elevators. The production of lift trucks and stackers will probably be added to the Crawfordsville production schedule as soon as possible.

Blaw-Knox Co. Announces Personnel Changes

Following the acquisition by the Blaw-Knox Co., Blawnox, Pa., of the Lewis Foundry & Machine Co., Groveton, Pa.; the Union Steel Casting Co., Pittsburgh; the National Alloy Steel Co., Blawnox, and the Pittsburgh Rolls Corporation, Pittsburgh, a number of changes in the executive personnels and boards of directors of all the companies have been announced.

The membership of the board of directors of the Blaw-Knox Co. has been increased from 16 to 22 and the following members added: J. P. Allen, president, Union Steel Casting Co.; Frank Cordes, president, Lewis Foundry & Machine Co.; J. R. Dunsford, vice-president of the Lewis company; D. L. Eynon, president, Pittsburgh Rolls Corporation; Samuel Harden Church, director in the Union company, and C. M. Thorp, Pittsburgh attorney.

Mr. Cordes has also been made a vice-president of the parent company. He continues as president of the Lewis company and also becomes vice-chairman of the board and a director of the Union company and the Rolls corporation as well as vice-president and a director of the National Alloy Steel Co.

Albert C. Lehman, president, Blaw-Knox Co., becomes chairman of the board of each subsidiary company. In addition to those mentioned above, the subsidiaries include A. W. French & Co., Chicago, manufacturers of road building machinery, acquired by Blaw-Knox early this year. Present officers of the parent company are A. C. Lehman, president; I. F. Lehman, F. M. Bowman, Frank Cordes and Wayne Rawley, vice-presidents; Benjamin L. Hirshfield, treasurer, and Chester H. Lehman, secretary.

Merger of British Steel Companies Imminent

A merger of leading steel producers of Great Britain involving between £20,000,000 and £30,000,000 ($97,000,000 and $145,500,000) is reported imminent. Outstanding in the new corporation would be the combination of Dorman, Long & Co., Ltd., with £12,000,000 ($58,200,000) capital stock, and Bolckow, Vaughan & Co., with £8,000,000 ($38,800,000) capital stock. Negotiations between these leading companies in the iron and steel industry have continued for some months and agreement in principle was reached some time ago.

Dorman, Long & Co. in 1923 acquired control of the plant and properties of Bell Brothers, Ltd., North Eastern Steel Co., Ltd., Sir E. Samuelson & Co., Ltd., and the Carlton Iron Co., Ltd. In addition to its own bridge and construction plants, mines and collieries and by-product coke operations, the company controls the Redcar Iron & Steel Works, Clarence Iron & Steel Works, Acklam Iron & Steel Works, Newport Iron Works, Carlton Iron Works, Ayrton Sheet Mills and Cleveland Wire Mills, all in the Middlesborough district. It is a producer of pig iron, semi-finished steel, plates, shapes, bars, sheets, rails and accessories.

Bolckow, Vaughan & Co., Ltd., also of Middlesborough, produces ferromanganese, spiegeleisen, pig iron, semi-finished steel, bars, shapes, plates and rails and accessories. The rated production capacity of the company is 15,000 tons of pig iron and 8000 tons of steel products a week.

Production and Stocks of Petroleum and Gasoline (a), Coal (a) and Electric Power Output (c)

	July, 1929	June, 1929	July, 1928
Crude petroleum produced, light, bbl.	82,878,000 [b]	75,390,000	.....
Crude petroleum produced, heavy, bbl.	8,449,000	8,013,000	.....
Crude petroleum produced, daily average	2,946,000 [b]	2,780,100	.....
Crude petroleum produced, seven months	579,442,000	.....	511,816,000
Gasoline produced, bbl.	37,855,000 [b]	35,606,000	32,959,000
Gasoline produced, bbl., seven months	244,433,000	.....	.....
Electric power output [d]	8,011,077	7,768,400	7,142,000
Electric power by water-power [d]	3,059,561	3,065,967	3,071,000
	August, 1929	July, 1929	August, 1928
Bituminous coal mined, net tons	43,560,000	40,635,000	41,108,000
Anthracite, net tons	5,970,000	4,993,000	6,759,000
Beehive coke made, net tons	556,000	600,200	295,300

[a] United States Bureau of Mines.
[b] Largest ever recorded.
[c] United States Geological Survey.
[d] Thousands of kwhr.

Appointed Sales Agent for Rustless Iron

The Superior Steel Corporation, Pittsburgh, has been appointed sales agent for the Rustless Iron Corporation of America for hot and cold rolled rustless iron strip. Future sales for the Rustless Iron Corporation of America in the Detroit district will be handled through the Superior office at 10252 General Motors Building, Detroit, in charge of Earl Park. Mr. Park will have associated with him J. Abbott as metallurgical salesman.

The office of the Rustless Iron Corporation of America at 731 Fisher Building, Detroit, will be maintained by A. L. Grinnell, as development engineer, to continue effort in the development of new uses of rustless iron.

Armco Stack at Ashland Makes Record

A world's record for production by a blast furnace with a 13-ft. 9-in. hearth is being claimed for No. 1 furnace at the Sixth Street plant of the Ashland, Ky., division of the American Rolling Mill Co. This furnace has just completed seven years of continuous operation, which record, we are informed, has been equaled or surpassed by only one other furnace.

While it has been surpassed in endurance it has achieved a better production record than any other furnace with a 13-ft. 9-in. hearth. The old lining contained 224,000 9-in. brick. During the seven years of continuous operation with this lining there were 809,951 tons of pig iron produced, or an average of 3.6158 tons per 9-in. brick equivalent.

The No. 1 has made other creditable output records as follows: Day, 454.82 tons; week, 2844.82 tons; month, 12,083.52 tons; daily average, 393.10 tons; pounds of coke per ton of pig iron, March, 1926, 1538.

Reed-Prentice Expansion

The Reed - Prentice Corporation, Worcester, Mass., manufacturer of machine tools, has let contracts for an addition, 60 x 150 ft. in size, to take care of expansion in business and to secure additional space on the assembly floor.

The Young Radiator Co., manufacturer of radiators, cooling systems and heating units, Racine, Wis., has been operating in the last two months 12 hr. a day in most departments and day and night in the tool shop.

An X-ray study of firebrick is reported in bulletin 193 of the Engineering Experiment Station, University of Illinois, Urbana. The pamphlet is of 13 pages and copies may be obtained from the experiment station for 15c.

Presents Argument for Steel Roofing

Building Code Committee Told That Flat Steel Roof Made of Ribbed Alloy Steel Sheets Is Economical and Will Serve Every Purpose

HERETOFORE in the preparation of building codes for congested cities, roofing consisting of steel sheets has not been given consideration except for shed buildings and temporary construction. This is due to the fact that the steel roofing available in the past was not of a quality or design that merited consideration in first class construction, other than for mill buildings.

During the past ten years, however, there have been improvements and new developments in steel roofs. Many are being produced today that have all the qualities required in the better types of buildings.

These improved "steeldeck" roofs differ from the old corrugated form of steel roofs in that they are not merely a flat sheet rolled in a wave formation. On the contrary, they consist of special alloy or otherwise specially prepared steel sheets formed so that when laid in place they present a smooth, flat outer surface stiffened by ribs formed into the sheets themselves or welded to them. On account of this flat rather than a corrugated surface steeldeck roofs are capable of being properly insulated and waterproofed to form a permanent, indestructible structure.

Definite Advantages of Steeldeck Roofs

Any new construction to deserve consideration, should have some definite quality that constitutes an improvement. These qualities of improved steeldeck roofing are a decrease in fire hazard, when compared with wood, economy when compared with other incombustible roof materials, and permanency when compared with steel roofing as used in the past.

It is not necessary to present argument that there should be a definite place in a building code for a construction which may be used at a cost little in excess of a two-inch plank roof and at the same time consists of incombustible material which prevents the spread of fire either from the inside or outside. Steeldeck roofing does exactly this. It is permanent, is designed to have strength equal to that required for any other material used for roof construction, and has insulating qualities equal to, or better than, other materials now used.

The modern tendency of building codes, of which the proposed building code prepared by the United States Department of Commerce is an outstanding example, is to specify two grades of fireproof construction: (a) fully fireproof and (b) fire protected construction. Fully fireproof construction applies to tall buildings and those in which the contents constitute a serious fire hazard. Fire protected construction is applied to buildings of lesser height and having contents that represent a less severe fire hazard. The latter includes hotels, hospitals, theaters, schools, and other buildings principally for human occupancy.

ROBERT D. SNODGRASS, Consulting Engineer for Truscon Steel Co., Youngstown, Ohio, Presented This Brief for Steel Roofing to a Special Committee Devising a New Building Code for New York. This revision of the code is sponsored by the Merchants' Association, and takes recognition of the fact that a building code written many years ago cannot adequately recognize new building methods or materials developed meanwhile, nor permit economies arising from a higher quality in steel or other constructional material

In these classes of building the floors and roofs represent two very different types of fire risks. A floor having combustible materials both above and below must have fire resisting qualities that will confine the hottest fire of which the contents are capable to the area in which the fire has started. The roof, on the other hand, must only prevent the spread of fire by being composed of materials that will not contribute to the fire, that will prevent the hazard of flying brands, and that will protect the building from fires on the outside.

If roofs are required to have the same fire resisting qualities as the floors, the owner is being required to go to an unnecessary expense. Therefore the use of steel roofing should be permitted on both fully fireproof and fire-protected buildings, provided the roof and supporting members be separated from the floors below by fireproof ceilings.

Requirements for Permanency

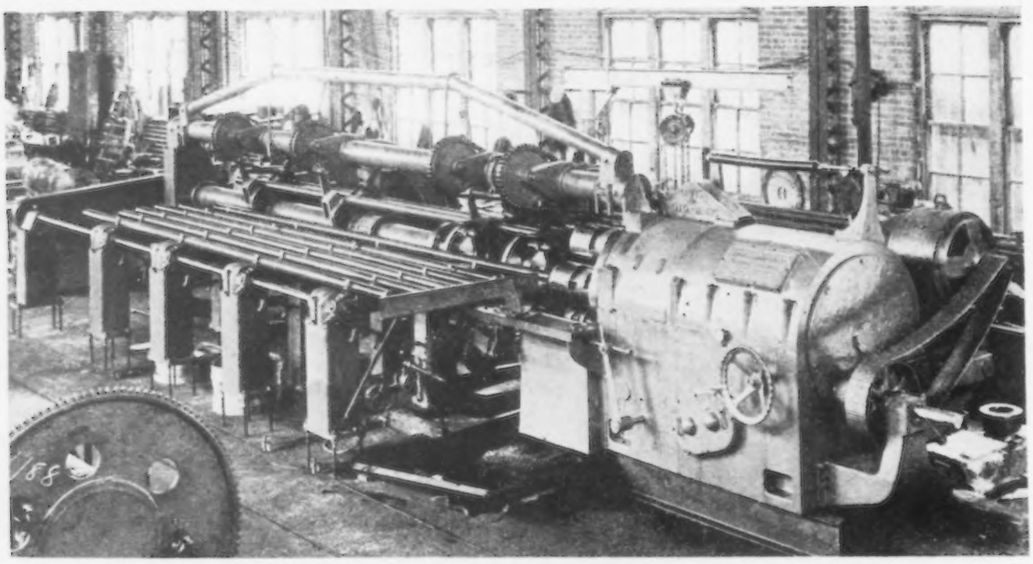
If they are to provide a permanent construction, steel roof sheets should be of not less than 20-gage steel rolled from a copper-steel alloy or other steel or iron sheets of equal corrosive resistance. Experiments conducted by the American Society for Testing Materials have demonstrated that steel containing 0.25 per cent copper or more is permanent when used as required in roof construction.

Steeldeck roofing of improved quality is now being manufactured by a number of well-known building material companies. All of them provide a deeply ribbed sheet designed in such a manner that the carrying capacity may be easily computed by ordinary methods. Depth of the sheets is variable to provide proper stiffness from the maximum to the minimum spans required in roof construction, and several gages are supplied to provide the required strength for supporting any desired live load.

To provide the needed thermal insulating qualities, the outside surface may be covered with any of the well known special insulating materials. As much or little insulation as required may be obtained by varying the thickness of this insulation. This insulation should be required only for fireproof building; in other types its use should be optional. Waterproofing should be used as required elsewhere.

Such a specification will provide a roof amply safe and fireproof for the fireproof classes of buildings and will result in a substantial saving in cost on all structures where steel roofing is used; and in other classifications this specification will tend to reduce the quantity of wood roofing used.

Scott-Weiss Steel Co., 110 South Dearborn Street, Chicago, has been appointed distributor for the products of the Una Welding & Bonding Co., Cleveland, and will sell its welding machinery to all industrial users except electric railroads.



A CRANE Places 5 to 7 Tons of Pipe on Skids Which Feed to the Conveyor That Is Part of the Pipe Threading Machine

Continuous Threading of Pipe

Machine Automatically Takes Pipe Lengths One After the Other and Discharges Them After Threading

CONTINUOUS threading machines for pipe up to 4 in. in diameter are now being manufactured by the Davis & Thompson Co., Fifty-seventh Avenue and Mitchell Street, Milwaukee.

Lengths of pipe are rolled down to a conveyor which is part of the machine. Stops are arranged so that the fingers which pick up the pipe will take only one pipe at a time, and rolls beside each conveyor chain press the pipe against a side channel-iron stop.

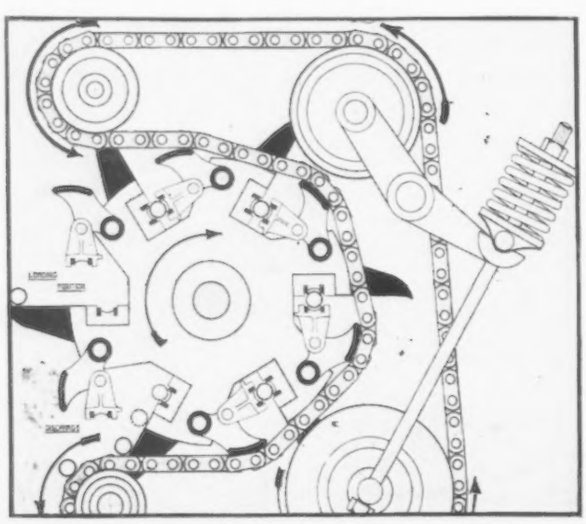
The rotating member of the machine is fitted with fingers which project out within reach of the conveyor and between the chains of this conveyor. These fingers pick up the pipe and as the machine rotates the pipe rolls on the fingers into jaws. Each jaw is equipped with a toggle and as the patented chain clamping arrangement wraps around the pipe carrier, pressure is brought on the toggle jaws, which clamp the pipe.

The dies then come forward. The dies are operated by cam and spring which force them on the pipe with proper tension. The pipe is threaded during rotation of the work carrier. When the pipe is threaded the proper length the die automatically opens and the spindle is withdrawn. As the toggle passes beyond the clamping action of the chain it automatically opens and releases the pipe which drops to a cast iron way.

There are six spindles in this threading machine and each spindle carries a die. Spindles are so arranged that they will thread the pipe concentric. Lubricant is forced through the fixture at a high velocity and the dies are constructed so that particles of grit, scale and dirt are washed out.

The machines are generally equipped with variable speed motors. Power is transmitted by a silent chain to the main drive shaft and from this shaft power is transmitted through silent chain to a friction disk clutch. The clutch is operated by a handle in front of the machine. This clutch controls the revolving pipe carrier and the travel of the spindles.

Sliding gears in the head provide speed changes beyond the variable speed motor range so that the machine can be used for threading pipe as small as 1 in. by the use of adaptors for small dies. Attached to and part of this machine is a gib crane which is used in removing die heads should one wish to do so without tying up the large traveling crane above the machine. The die heads weigh 400 lb. each. Chasers or segments can be changed readily without removing the die head from the machine. The machine is automatic in its action. Safety devices are provided to assure protection against breakage due to carelessness of operators in handling the machine.



PIPES Are Clamped in Jaws Which Are Closed by Toggles. The dies then come forward and the pipe is threaded during rotation of the work carrier

Machine Tool Subjects for Cleveland Meetings

The Machine Shop Practice Division of the American Society of Mechanical Engineers, in cooperation with the Machine Tool Congress, will hold two sessions in Cleveland during the Machine Tool Builders Exposition.

The first session will be on Monday evening, Sept. 30, with a discussion on "What information does the machine-tool buyer need when purchasing new equipment?" Another session will be on Tuesday evening, Oct. 1, the subject of which will be a discussion of "Present status of tungsten carbide as a cutting material."

A cargo of 16,158 tons of iron ore, said to have been the largest ever brought to South Chicago, Ill., was recently unloaded by the steamer Colonel James Pickands. Less than three weeks prior to the establishment of this record the steamer Samuel Mather broke the record of five years' standing when she brought in a load of 16,037 tons of ore.

New Multiple-Spindle Chucking Machine

Work Spindles Are Set Radially in Horizontal Turret, Presenting Work to Three Sets of Tools for Simultaneous Operation

A WORK - ROTATING multiple-spindle chucking machine that is a departure from usual designs has been brought out by the Goss & De Leeuw Machine Co., New Britain, Conn. In this machine the four work spindles are set radially, 90 deg. apart, in a horizontal turret and present the work to three sets of tools for simultaneous operation. The work is loaded and unloaded at the front position, the chuck being started and stopped by means of the lever just above it. This lever, which controls the driving gear in the work spindle, has three positions: a neutral position, which stops the spindle, an upper position, which engages a metal cone friction for picking up the load, and a lower position, which engages a dog clutch that furnishes a positive spindle drive.

Work spindles are driven by the main motor shown at the left in Fig. 1, and the mechanism is designed to transmit 25 hp. The power is transmitted through silent chain, back gears, quick-change gears and a pair of bevel gears to a vertical shaft in the center of the turret. From the vertical shaft the drive is through heavy spur bevel gears on the respective spindles. The four work-spindles revolve at the same speed. A two-to-one back gear furnishes a fast or slow speed for each combination of the quick-change gears, which are accessibly located (at the extreme right in Fig. 2). Spindle speeds ranging from 16 to 525 r.p.m. are obtainable.

A 5-hp. motor furnishes the drive for the turret indexing and all the feeds on the main tool-slides and the cross-slides. The third motor shown in Fig. 1, in the rear tool position, is part of the special revolving tool spindle attachment. This unit, which can be placed in any or all of the three main tool-slides, is noteworthy for its heavy spindle. It can be revolved at different speeds and, in conjunction with the revolving work spindle, a wide range of cutting speeds are obtainable, dependent upon the relative speeds of the two spindles. It is also said to furnish the ideal condition for drilling a true and straight hole, namely, revolving both the work and the tool. All three motors are connected to one control box and have conveniently located push-button control.

Threading, both internal and external, is accomplished by the lead screw method with a reversing electric motor, and can be done at any one of the three tool positions. Both inside and outside threads of different pitches can be cut simultaneously.

Placing the spindles radially provides room for any type of bearing. The machine illustrated has double-row ball bearings at the front and single floating ball bearings at the rear, both being of radial thrust type and pre-loaded to 4000 lb. With ball or roller bearings the forged alloy-steel hardened and ground spindles are made 4¾ in. in diameter; with plain bearings a 5¼-in. diameter spindle is used. The machine will swing chucks up to 20 in. in diameter.

The problem of indexing the heavy turret was solved by an unusual adaptation of the Geneva motion, double movement being used. Two rollers enter the Geneva slots one after the other, each moving the turret 45 deg. The turret is located in its indexed position by a heavy hardened and ground bolt that is tapered on one side, the bolt being operated by a compressed air cylinder with differential pistons that produces pressure of 2500 lb. The valve for these pistons is controlled by a cam on the outside edge of the Geneva wheel and therefore cannot get out of time. Operation of the bolt is without jar and is practically silent. After the locating bolt is in place the turret is locked in position by means of a large clamping ring bearing on two opposite 45-deg. sections.

Both the main tool and the cross slides are actuated by solid barrel track cams. These slides are of unusual weight and size and, by combining two motions, permit heavy taper turning and forming cuts to be taken. The standard plain slide carries a tool block having T-slots on its upper face. The block is also bored to take large boring bars or tool holders, while the side faces can be drilled and tapped for bolting special tool heads. The cross-slides also have T-slots.

Control is centralized. Coolant is

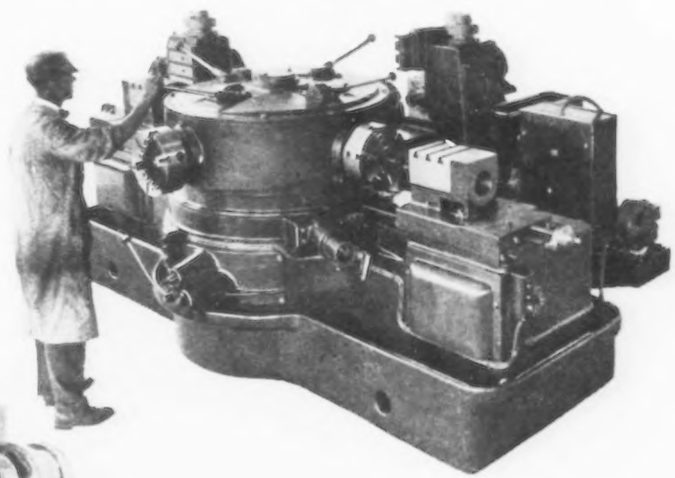


FIG. 1 (above)—Work Is Loaded and Unloaded at the Front Position, the Clutch Being Started and Stopped by the Lever Just Above It

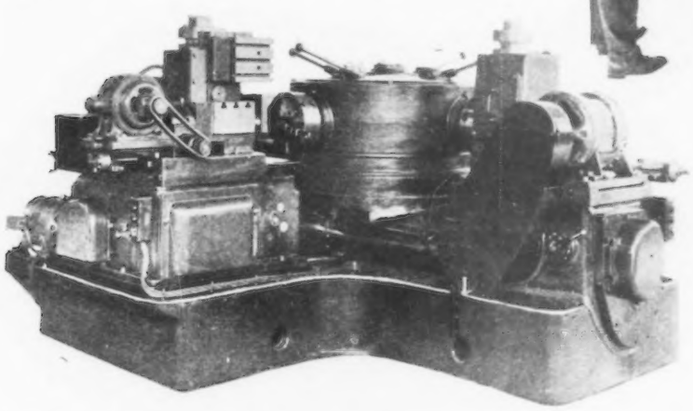


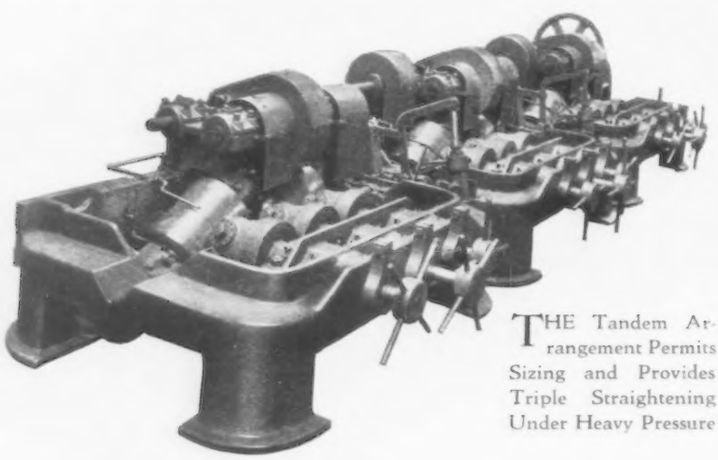
FIG. 2 (at left)—Work Spindles Are Driven by the Motor at the Right, Turret Indexing and Main Tool and Cross-Slide Feeds Being Actuated by the Motor at the Left. The third motor, in the rear tool position, is part of the special revolving tool spindle attachment

pumped from a 2-bbl. capacity reservoir located in the base. Thorough attention has been given to lubrication. All spindles and working parts within the turret are oiled by a separate wick-feed system that indexes with the turret. Lubrication of parts outside of the turret is by means of a mechanical oiler, oil being delivered to each bearing by a separate pipe.

This machine, designated as the No. 6, weighs 13 tons. It will be exhibited at the Machine Tool Show to be held in Cleveland Sept. 30-Oct. 4.

Machine Straightens, Sizes and Descales Steel Bars

A TANDEM arrangement to a straightening machine has just been brought out by the Sutton Engineering Co., Park Building, Pittsburgh, which, in addition to straightening, accomplishes the rounding up and sizing of hot rolled or cold drawn steel bars. The machine also eliminates the scale on bars in the operation.



THE Tandem Arrangement Permits Sizing and Provides Triple Straightening Under Heavy Pressure

The company's ordinary straightening machine as a unit consists of two drive rolls and three idler rolls, whereas this rounding-up machine consists of six drive rolls and nine idler rolls. By introducing the tandem arrangement, sizing takes place and the bar also obtains a triple straightening under heavy pressure. The rolls on the machine are of file hardness, assuring a long life, and, in addition to descaling and rounding up and straightening, give the bar a smooth finish. The tandem arrangement is necessary to make possible the rounding-up features, on the score that sizing is not easily accomplished by repeated passes through a single machine.

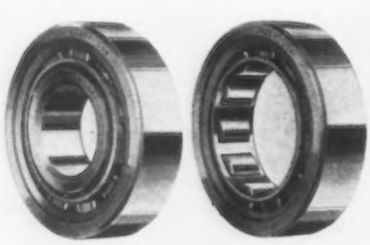
The operation is performed at the rate of 150 to 300 ft. per min., and the work is done cold without reheating. The operation is also continuous, as the bars automatically roll away from the leaving end of the machine without manual labor. The unit can be operated by one man. The machine will make possible the production of hot bars of straightness and accuracy not found in ordinary bars and where scale is objectionable on account of the wear on tools.

Single-Row Radial Roller Bearing

SINGLE-ROW radial bearings made up of solid rollers and designed to interchange with standard S.A.E. single-row ball bearings are being manufactured by the Hyatt Roller Bearing Co., Newark, N. J. This new line is not intended to replace the standard Hyatt roller bearing, which uses spirally wound rollers, but is offered as a supplement to it, for positions in which space limitations exist and loads beyond the capacity of ball bearings must nevertheless be sustained.

In this design the rollers are permanently retained in the outer race, the inner race being separable. A separator that floats on the rollers spaces them properly, and heat-treated rings retain them endwise within the outer races. The end rings and separator function to keep the rollers in proper alinement, assuring positive contact along their full length.

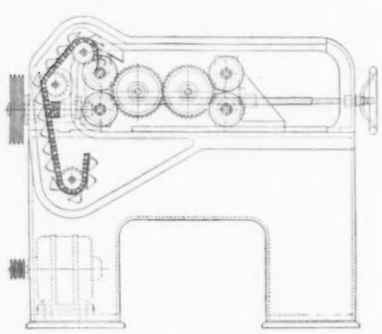
Rollers and races are made of chrome-nickel steel and end rings are made of vanadium steel to eliminate wear. Roller ends are rounded to facilitate assembly where the inner race is not used, and both outer and inner races are chamfered at one end.



Gear Lapping Machine

THE Lehmann Machine Co., St. Louis, has placed on the market a machine for lapping the teeth of gears, especially hardened gears, to the shape necessary for smooth running.

The functions of the machine are based on corrective abrasion governed by the restraining movements of round disks under pressure contact. It consists primarily of two spindles upon the outer ends of which are secured the mating gears to be lapped. These spindles carry hardened friction rolls of the pitch diameter of the gears being lapped, and are driven by contact with rolls on the driving spindles. Two of these driving spindles are journaled in a head which can be adjusted to bring the gear-carrying spindles together until their hardened rolls are under pressure contact, and the position of the mating gears is limited to the correct center distance. The pressure on the disks, necessary for the desired effect, reacts on eight large ball bearings in which the friction rolls are journaled. While the gears govern the general relative movement, the disks resist any departure from their normal movement. Oil and abrasive are fed to the gears being lapped.



Gears Are Lapped to the Shape Necessary for Smooth Running

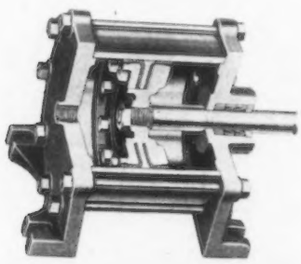
Absolute exactness in the diameter of the disks is always lacking to a degree sufficient to cause a slight departure from the correct relative general movements. This difference results in a continuous pressure on one side of the gear teeth, at first effective only on such irregularities as project beyond the correct tooth curves. Under the abrasive action the projecting irregularities become less and less pronounced until the desired smoothness of action is developed. A reversal in the direction of rotation brings the other sides of the teeth in contact with the same results.

The machine will be demonstrated at the Machine Tool Exposition to be held in Cleveland, Sept. 30--Oct. 4.

Self-Adjusting Non-Rotating Air Cylinders

NON-ROTATING double-acting air cylinders that are self-adjusting by air packing, thus eliminating the necessity for making hand adjustments, are being offered by the Logansport Machine Co., Logansport, Ind.

Air entering a recess in the packing serves to expand the packing against the cylinder wall, the gland packing being similarly expanded

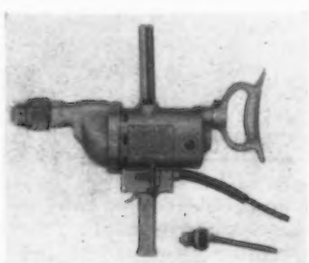


The Cylinders Are Self-Adjusted by Air Packing, Eliminating Hand Adjustments

against the piston rod. In addition, the new cylinders, while retaining the design and principal dimensions of the original Logan cylinder, are made heavier to permit higher air pressures, and have an enlarged air inlet and outlet, which provides for more rapid operation. For use in operating jigs and fixtures, raising platforms, etc, these cylinders are made in five standard models and in 11 sizes having bore diameters ranging from 1½ to 6 in. and with any length of stroke.

Light-Weight 5/8-In. Portable Drill

THE Wodak Electric Tool Corporation, 4627 West Huron Street, Chicago, has brought out a new portable electric drill which has capacity for



A Bench Stand Is Made for Use With the Drill

drilling up to ⅝ in. in steel and 2 in. in wood.

The machine is equipped with a General Electric motor and a conveniently located oversize double-pole switch. Shafts are mounted on ball bearings and heavy thrust loads are carried by Timken roller bearings. Other features include hardened steel gears, grease compartments designed for long periods of operation without refilling, and oversize ventilating fan.

To Demonstrate Milling of Airplane Engine Parts

THE entire exhibit of the Kearney & Trecker Corporation, Milwaukee, at the Machine Tool Builders Exposition, to be held at the Public Auditorium, Cleveland, Sept. 30 to Oct. 4, will be devoted to applications of milling machines in the airplane engine industry. In addition, a Curtiss amphibian plane has been engaged for transporting customers to and from the exposition, and for sightseeing trips over Cleveland.

Full-size airplanes, including the Wright nine-cylinder Whirlwind, will be on view. The Wright engine will be cut away and sectioned and driven by an electric motor to show operation of the master and baby rods and the movement of the pistons. A 525-hp. Pratt & Whitney Wasp engine and a Curtiss Challenger, a duplicate of the one used in Curtiss-Robin plane that recently established the endurance record at St. Louis, will also be displayed. A full-size General Electric airport beacon light with its beams revolving toward the ceiling will add emphasis to the aviation keynote of the exhibit.

Four milling machines, including a new bridge-type Mil-Waukee-Mil tooled for milling Wright engine crankcases, will be in operation. A 1404 Mil-Waukee-Mil equipped with a rise-and-fall fixture will mill the contour of Curtiss master rods, and a No. 2 standard vertical miller with "skip stop" rotary table will be in operation on the ends of Pratt & Whitney Wasp articulator rods. Small connecting rods for Harley-Davidson engines will be machined on a No. 2 standard horizontal miller. A large number of samples of other milled airplane engine parts will be displayed in two showcases, and display boards showing photographs of over 300 applications of the company's machines to airplane engine work will be on view.

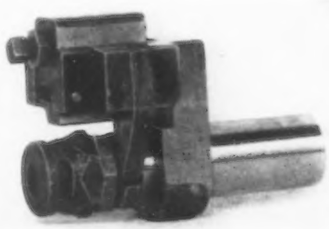
Some 17,000 special invitations to visit the company's exhibit are being sent by air mail. Arrangements have been made to have an air mail post box in the company's booth, and air mail post cards and postage will be supplied to visitors.

The amphibian plane, chartered from the Curtiss Flying Service, Inc., will operate from the water front airport at the foot of Ninth Street, making flights over Cleveland every 20 min.

Demco Drilling Machine Co., division of Merit Equipment Corporation, Cleveland, has appointed Commercial Tool Co., Cleveland, exclusive agent in Cleveland territory for Demco high-speed sensitive drilling machines.

Releasing Die Holder for B. & S. Screw Machines

THE Brown & Sharpe Mfg. Co., Providence, has developed a releasing die holder for use with acorn dies on its No. 00 and No. 00G automatic screw machines. In holding the thread within a definite length the device is of advantage when threading close to a shoulder. The length of thread is governed by the adjustable screw on the front of the holder, which comes in contact with the chuck



The Device Holds Threads to a Definite Length

guard over the nose of the spindle. The body of the tool is 1 7/16 in. long. The shank is ⅝ in. in diameter and 1⅛ in. long.

Furnace for Bright Annealing Small Parts

A SMALL continuous furnace for bright annealing and soldering small parts made of precious and semi-precious metals has been placed on the market by Brandt Engineering Corporation, 71 West Forty-fifth Street, New York. It has a long muffle with doors at each end, set in a furnace casing and heated with city gas. A slightly reducing atmosphere is maintained inside the muffle and the gases of combustion are excluded therefrom. The work is placed on trays and pushed through the furnace, going through a definite heating and cooling cycle, and eventually removed at a low temperature. Parts having a light tarnish, or blackened by a blow torch, emerge bright and free from oxide.

It is said that heat treating in such a controlled atmosphere eliminates the necessity for the customary "bright dip" into some acid, and effects a corresponding reduction in cost. Furthermore it is possible to do hard soldering on a mass-production scale by merely placing the parts in proper position, placing a little hard solder on the joint and passing them through the furnace, heated to a temperature slightly above the melting point of the solder. The reducing gases inside the muffle remove any oxide which exists, thus avoiding the necessity for flux, and the solder melts and spreads itself into the joint and fine adjoining crevices.

Holds Manganese Meeting in Washington

Association of Producers Devotes Annual Convention Largely to Tariff Question

WASHINGTON, Sept. 10.—With an attendance of about 50 members, the second annual convention of the American Manganese Producers' Association was held here at the Hotel Mayflower, starting yesterday and coming to an end today.

The tariff was the main theme of discussion at the meeting. "On the question of tariff hangs the destiny of the manganese industry," declared J. Carson Adkerson, who, as president of the American Manganese Producers' Association, declared the address of welcome. He took occasion to express thanks to Senator Oddie, of Nevada, and Representative Williamson, of South Dakota, for leading the fight to provide protection for the domestic industry. At the same time there were spirited attacks made on those who opposed making manganese ore dutiable and a sense of deep disappointment that the Senate Finance Committee had transferred manganese ore to the free list. It was evident that the association proposes to do all in its power to have it restored to the dutiable list.

In the course of reports from manganese districts, Dr. J. S. Grasty mentioned manganese deposits in different sections of Virginia, and in speaking of the Mineral Ridge occurrence, said: "At the present time the Hon. James W. Gerard, former ambassador to Germany, is also interested in the property. His thought regarding it, as he expressed it to me, was not a question of tonnage, as that had been convincingly demonstrated. He was concerned, however, with the question of how to market this, or any other American manganese ore, in view of the attitude of the steel companies."

President K. M. Leute, General Manganese Corporation, Detroit, said that his company is in possession of a process that "enables us to beneficiate this low grade ore to a product containing approximately 70 per cent manganese, 29 per cent oxygen and less than 0.01 per cent phosphorus. "With any assurance of a price of around 65c. a unit at the furnaces, which can be expected under Senator Oddie's amendment, we expect our property to shortly become an important producer of this raw material," he added.

"The Use of Manganese in Agriculture" was the subject of a paper presented by Dr. Oswald Schreiner, chief, division of soil fertility, Bureau of Chemistry and Soils, Department of Agriculture.

At an informal dinner last evening, Senator Henry F. Ashurst, of Arizona, presided as toastmaster, while William B. Daly, manager of mines, Anaconda Copper Mining Co., was the principal speaker. Among those present were seven United States Senators.

Technical papers, describing different processes of beneficiation, made up the program this morning, while the afternoon session was devoted to economic phases of the manganese industry and an address by Senator Oddie.

Board of Directors Enlarged

Officers were reelected as follows: President, J. Carson Adkerson, Hy-Grade Manganese Co., Woodstock, Va.; first vice-president, John H. Cole, president, Domestic Manganese & Development Co., Butte, Mont.; treasurer, A. J. Seligman, president, Butte Copper & Zinc Co., New York; secretary, H. A. Pumpelly, vice-president, Domestic Manganese & Development Co., Owego, N. Y.

The executive committee also was reelected, and consists of Mr. Adkerson, chairman; Richard H. Brown, president, Manhattan Electrical Supply Co., New York; Mr. Pumpelly; Mr. Seligman, and D. H. McCloskey, Jersey City, N. J.

The board of directors was reelected and nine members added, the new members being K. M. Leute, president, General Manganese Corporation, Detroit; Leslie L. Savaga, president, U. & S. Mining & Development Co., New York; James W. Gerard, New York; Col. George W. Steele, president, Brunswick Terminal & Railway Securities Co., New York; Wilson Bradley, president, Bradley-Fitch Co., Deerwood, Minn.; C. L. Berrien, general superintendent of mines, Anaconda Copper Mining Co.; G. P. Goodier, president, New Mexico Copper & Mining Co.; Homer C. Chapin, Chapin Exploration Co., and M. C. Lake, geologist, Duluth, Minn.

Open Meeting on Steel Metallurgy

Program of Metallurgical and Mining Advisory Board's Conference at Pittsburgh, Oct. 18

PROGRESS being made in metallurgical research and problems vital to the steel industry will be discussed at the third open meeting of the Metallurgical and Mining Advisory Boards to the Carnegie Institute of Technology and the United States Bureau of Mines to be held on Oct. 18 in the auditorium of the United States Bureau of Mines, 4800 Forbes Street, Pittsburgh.

Leading metallurgists and steel research engineers from all over the country will attend the all-day meeting which will be open to all persons interested. Illustrated progress reports will be given by research engineers of the Carnegie Institute of Technology and the Bureau of Mines.

At the morning session, 10 a.m., Dr. V. N. Krivobok, associate of the Bureau of Metallurgical Research, Carnegie Institute of Technology, and Dr. G. H. Herty, Jr., physical chemist of the Bureau of Mines, will offer an illustrated report on "Case Carburizing Research."

Dr. F. M. Walters, Jr., director of the Bureau of Metallurgical Research, Carnegie Institute of Technology, will deliver a report on the preparation of iron - carbon - manganese alloys. Dr. J. B. Friuf, a third member of the Carnegie research workers, will deliver a talk on the preparation of pure manganese, a process which was worked out in the Carnegie laboratory.

"The Physical Chemistry of Steel Making" will be the topic during the afternoon meeting. Doctor Herty will give an illustrated report on the fundamental studies carried on in the bureau's laboratory. Later in the meeting he will offer another report on plant research in open-hearth treatment.

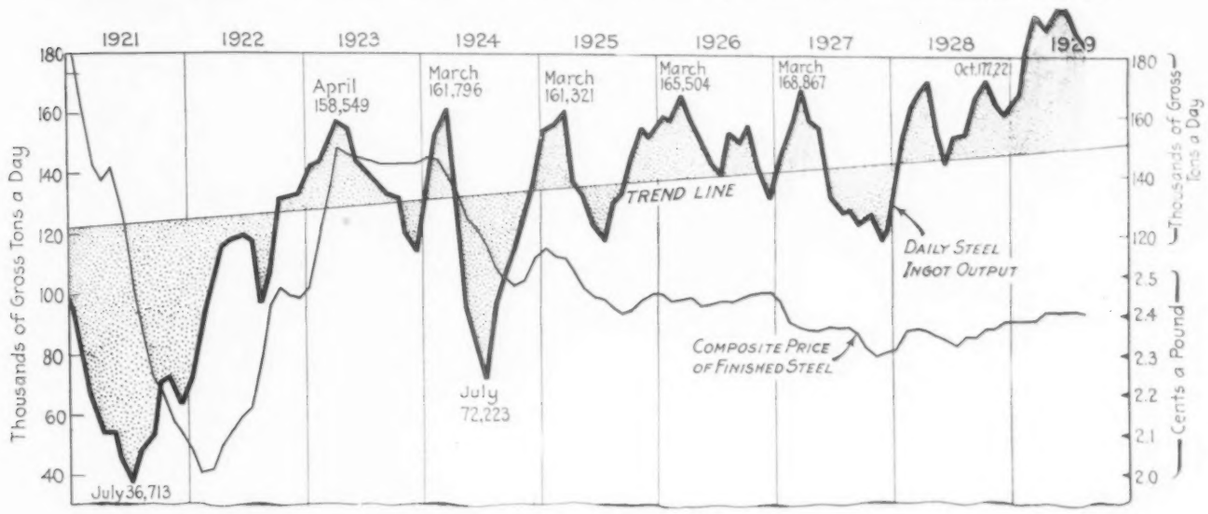
F. N. Speller, director, department of metallurgy and research, National Tube Co., who was elected chairman of the board last year, will preside at the day sessions. A. C. Fieldner, chief engineer, Experiment Stations Division, Bureau of Mines, Washington, will make the introductory address at the afternoon session.

The various reports will be interspersed with discussions. Among the speakers included in these discussions will be: O. E. Harder, director, department of metallurgy, University of Minnesota; W. J. Merten, metallurgical engineer, Westinghouse Electric & Mfg. Co., Pittsburgh; Louis Jordan, chief, section of chemical metallurgy, Bureau of Standards; Dr. H. W. Gillett, director of the Battelle Memorial Foundation; P. H. Brace, section engineer, metallurgical research department, Westinghouse Electric & Mfg. Co.; John A. Mathews, vice-president, Crucible Steel Co. of America.

The afternoon discussion group will include Dr. John Johnston, director, department of research and technology, United States Steel Corporation; R. J. Wysor, general manager, Jones & Laughlin Steel Corporation; A. L. Field, Simonds Saw & Steel Co.; Dr. George B. Waterhouse, director, department of metallurgy, Massachusetts Institute of Technology; H. B. Hubbard, superintendent, open-hearth department, Inland Steel Co.; V. B. Browne, assistant to the president, Allegheny Steel Co., and G. D. Tranter, superintendent, open-hearth department, American Rolling Mill Co.

The advisory boards were organized in 1923 by Doctor Baker "for the purpose of bringing the department of metallurgy at the Carnegie Institute of Technology in closer touch with the industries and to help the department to increase its usefulness and service."

Ingot Production in August Was 6.6 Per Cent Below the Record-Breaking Daily Rate of May. The trend line shows a normal growth of about 1,013,000 tons a year. Prices in August were 2 per cent better than at midyear of 1928



Largest August Steel Ingot Production

Greatest Ever Made in Any Second-Half Month—Daily Rate Lowest Since February—Eight Months 18 Per Cent Above 1928

PRODUCTION of steel ingots in August exceeded the July output by nearly 2 per cent, but there was a reduction of about 2 per cent in the daily rate, as there were 27 working days in August, against 26 in July, according to returns to the American Iron and Steel Institute. The total, calculated on returns from companies which made 94.51 per cent of the 1928 output, was 4,925,802 gross tons of open-hearth and Bessemer ingots. This total has been exceeded by only three months in all the history of the steel industry of the United States—March, April and May of this year. The daily average, at 182,437 tons, was smaller than those of the five preceding months, but otherwise the highest ever made.

Both open-hearth and Bessemer tonnage showed gains in August compared with July. These gains were greater in the Bessemer column than in open-hearth, having been almost 3 per cent against less than 2 per cent. The August open-hearth tonnage, in fact, was slightly less than that in June, whereas the August Bessemer tonnage was 7 per cent above that of June, and ranked highest for any month since March, 1924, with the exception of last May.

Aggregate output of Bessemer and open-hearth ingots in the eight months is calculated at 38,731,069 tons. This is 18.1 per cent ahead of last year's eight-month total, which was the largest ever reported previously. Incidentally, the eight-month tonnage of 1929 is greater than was ever before made in the first nine months of any year and is greater than was ever before made in the first 10 months of any year preceding 1926.

Electric and crucible ingots are not included in the above totals. Production of those two types of steel last year averaged about 1480 tons a day. Some such amount would have to be added to the daily figures in the table to obtain the total ingot output of the country.

Particulars for the past 20 months are shown in the table. The diagram traces the course of ingot production and finished steel prices over the period from the beginning of 1921.

PRODUCTION OF OPEN-HEARTH AND BESSEMER STEEL INGOTS
(GROSS TONS)

	Reported by Companies Which Made 94.51 Per Cent of the Steel Ingots in 1928		Calculated Monthly Output All Companies	No. of Working Days	Approximate Daily Output All Companies
1928 Months	Open-Hearth	Bessemer			
January	3,273,294	498,691	3,990,902	26	153,496
February	3,300,407	521,250	4,043,457	25	161,738
March	3,692,648	567,330	4,507,217	27	166,934
April	3,505,104	564,110	4,305,382	25	172,215
May	3,394,301	582,128	4,207,212	27	155,823
June	3,010,341	528,193	3,743,903	26	143,996
July	3,068,257	528,588	3,805,598	25	152,224
August	3,379,625	569,771	4,178,610	27	154,763
Eight months...	26,623,977	4,360,061	32,782,281	208	157,607
September	3,375,654	544,710	4,147,893	25	165,916
October	3,795,800	599,098	4,649,968	27	172,221
November	3,442,112	590,669	4,266,835	26	164,109
December	3,301,114	496,679	4,018,208	25	160,728
Total	40,538,657	6,591,217	49,865,185	311	160,338
1929					
January	3,694,218	549,616	4,490,354	27	166,309
February	3,599,224	489,279	4,326,000	24	180,250
March	4,183,869	596,691	5,058,258	26	194,548
April	4,026,576	640,351	4,938,025	26	189,924
May	4,276,186	707,484	5,273,167	27	195,302
June	3,990,798	622,585	4,881,370	25	195,255
July	3,922,532	649,950	4,838,093	26	186,080
August	3,987,352	668,023	4,925,802	27	182,437
Eight months...	31,680,755	4,923,979	38,731,069	208	186,207

Orders were placed in July for 2052 steel boilers, with 2,081,199 sq. ft. of surface, against 1685, with 1,822,799 sq. ft., in June, according to reports received by the Department of Commerce from 80 manufacturers. For the first seven months of the current year orders were placed for 10,777 boilers, with 11,825,051 sq. ft., as compared with 11,099, with 10,272,539 sq. ft., for the corresponding period of last year.

BOOK REVIEWS

The Revolution in Industry

Industrial Economics. By Dexter S. Kimball, professor of industrial engineering and dean of the College of Engineering, Cornell University. 312 pages, 6 x 9¼ in. McGraw-Hill Book Co., Inc., New York. Price $3.

Intelligence consists in taking into account all the elements in a situation, and the industrial scene has been steadily advancing in complexity since, at the end of the 18th century, seven basic mechanical inventions—five in England and two in the United States—started the long drawn-out change called the Industrial Revolution. Not, however, until the opening of the 20th century was a real attempt made to study this phenomenon in all of its manifestations, scientifically to isolate, measure and relate its elements, and by generalizing about them to lay the foundations of an industrial economy.

Doctor Kimball's book is an up-to-date account of the result, four chapters or about one-fifth of its 300 pages being devoted to a preliminary sketch of the historical background of modern industry. The five chapters that follow are a fine example of logical development and deal with the basic principles of scientific method in industry, with specialization, modern division of labor, classification of costs, production factors and standardization. The examples are naturally drawn, chiefly from the machine shop industries which pioneered in these matters; but the book is not too technical for the general reader, while a valuable adjunct to the teacher and student.

The second half of the book deals adequately with the growth of American industry and with the problems arising out of its enormous scale, increasing mechanization, mass production, mass management and mass organization and progressing integration.

Finally, there is an up-to-date discussion of the measures of management—financial, budgeting, labor saving, and production quality and quantity. We are pleased to note on page 255 the warning that the Taylor system is subject to the law of diminishing returns, like any other economic mechanism, and also that the author lays squarely on the shoulders of employers their responsibility for the unpleasant consequences to the worker of sudden technological changes. While capital and management are very fully studied in their relation to industrial economics, we note the absence of any such recognition of the other side of the payroll; of labor's reservation of the right to make its own mistakes, of its insistence upon status, and of the serious consequences on industrial economics of refusal.

JOHN CALDER.

Continental Wire Making

Draht-Welt-Buch. Edited and published by Martin Boerner, Halle (Salle), Germany. Second edition, 1000 pages, 6 x 9 in.

The reviewer approached this book in the spirit in which one would go to see the performing sea lions, that is, not expecting to see a thing well done, but prepared to be amazed at seeing it done at all. The reviewer was in this case pleasantly disappointed. The thing is well done. Herr Boerner has, with enormous industry, amassed a great volume of data on wire drawing and the manufacture of the commoner wire products, has arranged it logically, illustrated it copiously and summarized it in numerous well-arranged and clearly understandable tables. If its accuracy is of the same order as the patience and industry expended in the collection and arrangement of the material, the book is a notable achievement and should be highly appreciated throughout Germany and Continental Europe.

It is doubtless vulnerable to the usual criticism that it tells all the things you know and fails to explain those you don't know. It must be remembered, however, that wire drawing is just now emerging from the jungle of mystery and secrecy, and that it is at best an art of infinite detail and one which makes greater demands on its raw material than any other of the metal-working arts. Wire drawing itself is a continuous and searching test of all properties of metal and is undoubtedly the most difficult art to reduce to formula and to standard practice. Granting that the present book may be inaccurate in some detail, granting that it may explain the obvious and neglect the obscure, it still stands as a real achievement. It will, at the very least, serve as a sort of lay figure which may in later years be more completely and becomingly draped. As a matter of fact, the American wire industry lacks such an outline.

The book opens with a brief historical review and a description of rod mills of all types. Pickling data follow, with notes on inhibitors and much detailed information on the recovery of ferrous sulphate. Baking receives adequate notice, although it is a "fancy touch" in Europe rather than a necessity, as in American practice. Dies and general wire drawing practice are described in detail with tables setting forth drawing practice for many grades of wire both common and special, as well as block speeds and diameters, horsepower, and production per man under various conditions. Low-carbon wire, together with annealing, takes 170 pages. Galvanizing receives 40 pages, and is followed by a section on galvanized strand. Nails, tacks, wood screws and other cold headed products receive detailed treatment. Barbed wire gets 25 pages. Netting, hexagon mesh and other loom products are reviewed in much detail in 70 pages. Chain and general hardware fill 40 pages. All these sections are profusely illustrated, and all information carefully tabulated. Even building layout and spacing of machines and aisles are covered.

Thirty pages are devoted to the theoretical side of cold working as an introduction to a section on patenting and the manufacture of rope and other high-carbon wire products. The last 200 pages are devoted to the non-ferrous metals and to such special subjects as plating with brass, nickel, cadmium and chromium. There is a good general index and 17 pages of the most complete bibliography the present writer has ever seen.

A word of warning is necessary at this point. Interesting as the book is, it contains little or nothing of practical value to the American wire producer. This is because of the fundamental difference between wire-drawing practice in Germany and in America. America and Great Britain follow the dry practice, resorting to wet drawing only in special cases; Europe, on the other hand, reserves the dry process for special cases. Typical European practice is to reduce a lightly limed and unbaked number 6 gage rod two drafts to 10 gage. At this point it is passed to the "middle man" who draws it wet to 14 or 15 and passes it on. The middle man uses more cosmetics than a Hollywood beauty. He has a special dope for removing the dry drawn coat; a special liquor for establishing the copper coat and a third liquor for

lubricant. These liquids differ in composition for various grades of wire, as do also the corresponding baths used by the 15 frame men and the fine wire drawers. Details of their composition and preparation are faithfully recorded in the book.

These various treatments are hand operations. They cramp the production of the wire drawer, and they restrict him to small bundles, which further cripples his productivity. Wet drawing restricts him to relatively light drafts. Output per man ranges 50 to 60 per cent of the American output in single-hole work, and 25 to 30 per cent of the American continuous machine output. The handicap imposed by small bundles carries over into the nail and fence mills, where for this and other reasons production lags far behind the American figure. Nail wire is usually drawn dry, even abroad, because dry wire is much easier on the cutting dies.

American readers will note many interesting differences in practice, apart from those imposed by the wet process. Card wire seems to be produced from low-carbon as well as from high-carbon steel, a drawing practice being indicated for each. Furniture springs are described as drawn from low-carbon rods which have been stiffened by coiling under water at the rod mill. In this country low-carbon springs are believed to be obsolete. Rope wire and similar grades appear to be nearly always drawn one draft from the green rod before the first heat treatment. There is some pot annealing in these grades and a sort of non-continuous patenting, secured by dumping bundles from a muffle furnace into a lead pot. There is a tendency to reserve continuous patenting as a final treatment before the last series of drafts. In general, labor is wasted and fuel scrupulously saved.

Any American wire mill executive who has a reading knowledge of German will find this book entertaining. It is well written, so far as a foreigner can judge, and entirely free from the involved structure characteristic of much technical and literary German. As technical German goes, it is very easy reading. The book is well edited and practically free from typographical errors.

It is a relief to find one detail deserving of criticism. The binding is flimsy, scarcely likely to survive one thorough reading.

—K. B. Lewis.

A Source Book on Industrial Economics

History of Manufactures in the United States. Vol I, 1607 to 1860. By Victor S. Clark. 607 pages, 6¾ x 10 in. Published for the Carnegie Institution of Washington by McGraw-Hill Book Co., Inc., New York. Price $7.50.

Emphasis should be laid on the fact that the important work by Mr. Clark is neither a technological, a mechanical nor a biographical book, but an economic history in the strictest sense of the word; it is a new and enlarged edition, based on original material, the fruit of researches since 1904. As a history, it commences with the influence of natural resources, transportation, markets, and the European background on colonial manufactures; it describes the relations of capital and labor to the progress of early manufacturing and its technology and organization. Political propaganda concerning home industry and manufactures during our Revolution, and subsequent foreign influences, are thoroughly treated. Chapter XV, on Capital, Profits and Wages in Manufactures, naturally treats on the early commercial conditions affecting manufacturers, the sources of industrial capital, manufacturing profits and commercial crises such as those from 1815 to 1826, 1837 to 1840, and 1857 to 1861.

The flood of imported goods after the War of 1812 suspended many local industries, especially in textile lines. Mention is made of the irretrievable ruin of those mill-owners who held on in an advancing market in the hope of still higher prices, hope blasted by the declaration of peace. That in 1822 many typical Philadelphia four-story houses with marble steps were sold for a dollar apiece (being on leased ground) will be news to many.

The 1857 crisis paled before the general upset caused by our Civil War, at which time, however, our manufacturers had not only accumulations of resources, but no debts to Government for duties, as in 1837.

The introduction of the factory system makes an interesting chapter; and in subsequent sections there are grouped a consideration of wood-using manufacturers, agricultural implements, and industries using farm products as raw materials; while the manufacture of metals and the textile industries are given separate chapters.

In all these pages there is interesting and profitable reading for those who wish to reason from cause to effect and on to after-effect.

Each reader had best make his own review and application of this valuable compilation, as best throwing light upon his own economic problems.

Robert Grimshaw.

Steels for High Temperatures and Pressures

Creep of Steel at High Temperatures. By F. H. Norton. 83 pages, 6 x 9¼ in., illustrated. McGraw-Hill Book Co., Inc., New York. Price $3.

This book is really a treatise covering the results obtained in testing a number of steels at elevated temperatures for the Babcock & Wilcox Co. The author is a Research Fellow at the Massachusetts Institute of Technology, the work having been carried out in the Department of Physics of that Institute. The steels tested were of three types: (1) austenitic nickel-chromium; (2) chromium steels of the stainless type; and (3) plain carbon and pearlitic alloy steels.

Generally speaking, the method used by the author for determining the deformation of steel under constant load for long periods of time at elevated temperatures is essentially the same as that in current use in tests of this kind, but differs somewhat in detail—as is usually the case. The amount of laboratory space required for furnaces and controls of long-time creep testing at elevated temperatures is considerable, and depends on the number of temperatures at which the material is to be tested and the number of loads applied at each of the temperatures. The author has cut down the usual number of furnaces by an arrangement in which as many as six specimens may be heated at once in the same furnace and different loads applied to each one. As a rule, other investigators have used a furnace for each load. For practical purposes the method used by Norton has a very strong appeal from the point of view of both economy of space and of funds. For very precise work it may be that the method is questionable. Measurements of elongation were taken with an accuracy of 0.0001 in., which, for long-time testing, seems amply accurate.

The results appear to be as accurate as any long-time test results the reviewer has seen published. The author gives several pages to the results of others with which he finds himself generally in fair agreement. It is not to be expected that different investigators will find close agreement in all their work, particularly when the initial condition of the material tested is unknown. This is one point which may be criticized in the present case, the initial condition of the material being given in only very general terms, excepting perhaps in the carbon and structural pearlitic alloy steels.

The material in the book is well, although perhaps too concisely, presented. Nevertheless, it is a valuable addition to the literature and data on the subject. One chapter is given over to a well selected bibliography bearing on the flow of metals.

F. B. Foley.

Guide Posts for Association Activities

Trade Associations. The Legal Aspects. By Benjamin S. Kirsh. 271 pages, 6 x 9 in., including references and index. Central Book Co., New York. Price, $5.

Mr. Kirsh takes a surprisingly friendly and liberal attitude toward trade associations in this book, when it is remembered that he was at one time special assistant to the United States attorney in New York. In this capacity he actively prosecuted many cases under the anti-trust laws, wherein trade associations have been defendants almost as often as single companies. One gains an impression from the book that trade associations of today are quite different from their predecessors, the pools, trusts, communities of interest, and holding companies, and that within the law there is a very definite place for them in the industrial structure. And he has clearly interpreted the laws governing organized cooperative industrial effort.

By means of decisions made by the courts, Mr. Kirsh points out the legal limitations of trade associations in the collection and dissemination of statistics; of uniform cost accounting methods; of credit bureau functions; of patent interchange; of uniform basing point systems; of collective purchasing functions and of standardization. He also has devoted chapters to trade relations and to the restrictions of channels of distribution.

In view of the prolonged action by the Federal Trade Commission seeking to abolish Pittsburgh Plus quotations on steel products, the chapter on uniform basing point systems will be interesting to steel manufacturers, although the author has derived most of his data from decisions in cases relating to other industries.

"Where the purpose of such a plan" (uniform basing point), says Mr. Kirsh, "is to present in simplified, convenient and readily available form, the costs of transportation to various points of consumption, such a function, and the means reasonably adopted to accomplish that end, have received the stamp of judicial approval. * * * The inquiry by law, as to possible violations of anti-trust statutes by the operation of uniform basing points systems, relates to their use as instrumentalities in agreements among the members of the association to fix a deliberate price of commodity at a minimum figure."

Viewed as a whole, the volume is a welcome addition to the rather scant literature of trade association activities. It not only epitomizes the important cases brought under anti-trust laws, but from the decisions the author has established several channel markers for safe legal sailing. The book is likely to find liberal use as a reference, because it has so completely covered the legal phases of trade associations.

G. F. TEGAN.

An Elementary Text on Iron Founding

Foundry Practice. A Text Book for Executives, Molders, Students and Apprentices. By R. H. Palmer. Pages 450, 5½ x 8¼ in., illustrated. John Wiley & Sons, Inc., New York. Price, $3.50.

The fourth edition of this work dealing with the fundamentals of the foundry art is a very satisfactory volume to place in the hands of beginners, due to clarity of the description of the basic principles and the absence of involved technicalities. The scope of the text is limited, in that it deals chiefly with only one division of the foundry trade classified as heavy gray iron jobbing work. Steel, malleable and brass foundry practice is covered in 17 pages, with little information of practical value.

Methods of mass production requiring highly mechanized equipment for materials handling are not discussed. Cost methods, programs for the improvement in production of the quantity and quality of castings, as well as methods of technical control of materials and processes are also omitted. As the development of the foundry art in the future will depend on these factors, it may be regretted that this and other texts do not inspire the student by some appreciation of them.

The author has approached the problem of developing a method of instruction with a sure and firm hand. There is no lost motion in the presentation of facts regarding molding and cupola operation. Neither has he surrounded the metallurgy with a halo of mystery and quack chemical terms. Such treatment is a relief from that of the average writer who may approach the subject from the practical side.

W. F. GRAHAM.

Notes on New Books

Ninth Year Book of the American Bureau of Metal Statistics has been issued at 33 Rector Street, New York. It contains tabulations (often in great detail) of the source and destination of copper, lead, zinc, gold and silver throughout the world since 1917. The 112-page book, whose price is $2, is compiled from reports issued by the bureau monthly and quarterly, much of the data being derived from original sources. The American Bureau of Metal Statistics is maintained by American non-ferrous metal producers, but the statistics are available to any interested person upon payment of moderate subscription.

A Visitors' Manual of the National Bureau of Standards has been issued by that organization in the shape of a 16-page pamphlet of pocket size, concerning the activities of the bureau, showing its location in the city of Washington and the location of the numerous buildings in the group. The main points of interest for a visitor are brought out in convenient form for reference.

Some of the conditions under which a conveyor system might be made a profitable investment are outlined in a book under the title "Conveyor Facts," published by Mechanical Handling Systems, Inc., Detroit, and written by Norman H. Preble of that organization. Two elementary principles are brought out as follows: (1) "In handling materials perform only those handling operations which are absolutely necessary; and (2) perform these operations in the way that secures the lowest cost." Both of these principles are subject to analysis and each application of them are subject to careful study of the situation at hand, one may then determine what constitutes the handling problem, and how the lowest cost may be achieved.

Value of a special safety campaign is realized in reducing the number of industrial accidents, and usually the money expended in propaganda is recovered by the saving in compensation and medical expense. The effect upon employees is also good. The spirit of competition, which is always made use of, stimulates the employee's loyalty to the company and builds up an excellent plant spirit. These beneficial results are discussed in pamphlet No. 51, "Planning an Industrial Safety Campaign," issued by the National Safety Council, Washington.

New Books Received

Handbook of Corporate Management and Procedure. By Earl A. Saliers. 1237 pages, 6 x 8½ in. McGraw-Hill Book Co., Inc., New York. Price, $7.50.

Transactions of the American Institute of Mining and Metallurgical Engineers, Institute of Metals Division. 1929 pages, 6 x 9¼ in., illustrated. Published by the Institute, 29 West Thirty-ninth Street, New York.

Vielschnittbänke. By Max Kurrein. 114 pages, 7 x 10 in., illustrated. Guido Hackebeil, Stallschreiberstrasse 34, Berlin, S 14, Germany. Price, 15 m.

This Issue in Brief

Cuts heat-treating costs by connecting furnaces and quenching tank in an automatic unit. Two men do work formerly done by 12. Three large furnaces are set in straight line, joined by conveying system. By altering time cycles and temperatures any kind of material can be treated.—Page 663.

* * *

Handy stacking rack makes it possible for one man to pick up and store a carload of tubing in a half-day. Tubes are hand-loaded into rack, consisting of two U-shaped bars. The loaded rack is lifted by hoist mounted on overhead tramrail and set down in storeroom. Aisles between loads are not needed.—Page 666.

* * *

Production increased from 10 to 25 per cent and spoiled goods reduced by adequate lighting. Investigations reveal that good light is a powerful aid to economical production and a positive reducer of industrial accidents.—Page 670.

* * *

Marked savings made by using oil instead of gas as open-hearth fuel. Steel mill cuts costs by buying residual heavy oil from refinery. Special class instruction of furnacemen avoids greater refractory expense upon changing over to oil fuel.—Page 671.

* * *

Cast irons of less than 3 per cent carbon show no improvement in physical properties when superheated, unless silicon content is high. Higher carbon irons have improved properties as superheat is raised from 1365 to 1480 deg. C., and then up to 1605 deg. C. —Page 674.

Cleaning cost is big item in manufacturing enameled parts. In some kinds of metal radiator cover work cleaning cost is sometimes 10 per cent of the total.—Page 673.

* * *

Welding is employed to alter old mill motors so that roller bearings may be installed. Total welding time per frame, to remove projections which might interfere with roller bearing cartridge, is 2.5 hr.—Page 677.

* * *

Unnecessary expense saddled on to building owners if roof is required to be as fire-resistant as the floor. Engineer contends that improved steel roof, having flat surface stiffened by ribs, provides adequate protection for any type of building.—Page 679.

* * *

Cheap foreign labor gives way to material-handling equipment. Chilean nitrate plant reduces costs sharply by installing labor-saving equipment and pays for the entire installation out of savings.—Page 668.

* * *

Working model proves an important factor in success of employee instruction class. Manufacturer gets such good results from course introduced temporarily, for an emergency purpose, that he is continuing it. Working model claims close attention of class members.—Page 671.

* * *

Labor wants most of all a good plant manager. Professional labor leader is usually ignorant of good management methods. Prosperous condition of American manual worker is due largely to what has been done for, not by, organized labor.—Page 690.

New August high ingot production record made with average daily output of 182,437 tons. Eight months' total is 18 per cent above same period of 1928.—Page 685.

* * *

Babson's faux pas reveals unsoundness of economists' prophecies. Statistics adequate for sound prognostication do not exist. Some business economists fail to recognize this fact, and are prone to confuse theory and hypothesis.—Page 690.

* * *

Doubles production, cuts labor costs 15 per cent, and reduces rejections 25 per cent by conveyorizing the lacquering operation. Conveyor seven-eighths of a mile long carries stamped parts through series of spray booths and drying ovens.—Page 659.

* * *

Achieves proper heat gradient in heat treating by dividing furnace into three zones: preheating, heating and soaking. Each zone has its automatic temperature control. Hot gases pass along toward charging end, giving their heat to the cold, incoming work. Page 664.

* * *

Heat-treated parts dumped into quench chute by unusual method. Trays of work, with a trunnion at each end, are mounted on three steel rails, and are supported by rails underneath. Supporting rails end at quench chute, so that the tray upsets, and trunnions ride on rails over-passing quench tank, to receive work at discharge end of tank.—Page 665.

* * *

Lighting costs should be about 2 to 4c. a sq. ft. a year for steel works buildings. Installation cost ranges from 5 to 10c. a sq. ft., depending upon class of work done.—Page 670.

A. I. FINDLEY
Editor

THE IRON AGE

W. W. MACON
Managing Editor

ESTABLISHED 1855

The Babson Episode

THERE were amusing features—notwithstanding a section of Wall Street grew indignant—in the direful prophecy of Mr. Babson, though unfortunate persons who unloaded stocks on his advice may not have the same appreciation of its humor as a disinterested bystander. The very next day came a contradictory prophecy from the mouth of Professor Irving Fisher, and there was something humorous in that also.

Mr. Babson and Professor Fisher both may be called eccentric economists. Professor Fisher is known for his extravagant conception of the quantitative theory of money and his well-advertised nostrum of a stabilized dollar. Mr. Babson, who has shown himself an extraordinary salesman, has made a great commercial success in capitalizing the principle that action and reaction are equal, in economics as well as in physics.

During the last two or three years, however, it has appeared that in our American economy action and reaction have not been equal—certainly not as measured on the babsonchart—and that has worried, we might say peeved, Mr. Babson. Nevertheless, if he continues long enough to preach the approach of a recession he may eventually find himself right.

Rather curiously in his last prognostication he naively refuted himself in drawing attention to the fact that the majority of stocks listed on the New York Stock Exchange are even now selling for less than at the beginning of this year, pointing out that the extraordinary advance has occurred in but relatively few. Hard-headed Wall Street, as soon as it caught its breath, promptly arrived at the conclusion that this indicated the absence of bubble-blowing and demonstrated that the stocks that had made great advances had done so for good reasons; in other words, that this has been a selective market, just as many authorities have been describing it all along.

There is a real lesson in the recent Babson episode, to the effect that economists ought not to essay to be prophets. Science leads properly to prophecy. Indeed the final test of a theory is the ability to prophesy according to it. We should not, however, fall into confusion between theory and hypothesis, which economists appear to be especially prone to do. Economic science in its everyday contact with affairs does not know enough of facts. Adequate statistics, as we have said before, do not exist. It is unfortunate that the new profession of business economists is unwilling to recognize this and in some instances seems to tend toward charlatanry. Giving advice to the public either to buy stocks or to sell them certainly assumes a great responsibility.

Labor Day, 1929

IN its Labor Day speeches this year organized labor was complacent. It had good reason to be. In the whole history of the world the manual worker was never so well to do as he is in the United States of America at the present time. No one begrudges this. On the contrary every one rejoices that our toilers, who comprise about 99.9 per cent of us, are so comfortable and happy. But a word must be said, as one hears organized labor appropriating to itself the credit for this and talking of how it aims to extend the vogue of the five-day week (at six days' pay) and achieve other things.

The beneficence of the present American economy is the result of what has been done for labor, not by it. Indeed, the attitude of organized labor has been a good deal of a clog tied to our feet. The men who have done the thing are the scientists who have studied the laws of nature; the inventors who have utilized them in ingenious, often astounding, ways; the engineers who have practicalized the inventions and built works in which to exploit them; the executives who have organized the operation of the works; and the financiers who have furnished the resources. No labor leader ever did any of those things, but often they have joggled the elbows of the men who were doing them.

The men who have done these things and are continuing to do them are the very ones whom the politicians revile and have tried to cripple with restrictive legislation and have punished with surtaxing of their income, all reflecting jealousy of the failure of nature to create all men equal. The men who toil in our mines, mills and factories have a far better appreciation of this than do their professional leaders. Above all things they want a good manager of the plant in which it is their lot to work. The professional labor leader scarcely knows what a manager does.

Labor unions have never been creative. They operate rather in the division of the proceeds of industry, exacting for their members all that they can get. If they maintain a monopoly by agreement among themselves, as do the building mechanics of the Atlantic seaboard, they get a good deal both in the matters of wages and privileges. We may not blame them for such accomplishments, although they bear hardly upon persons who want to build houses and they raise the cost of rent in general. However, few of us are

altruistic. It is human nature for each to do the best for himself that he can. The labor leaders might be frank as to this and not claim virtues that they do not possess any more than other persons.

Steel Records Higher and Higher

JULY added over 1,000,000 tons to the record of steel ingot production in 12 consecutive months and now August has added 750,000 tons more, exceeding by approximately that amount the production of August, 1928. An impressive comparison is made with recent calendar year totals:

Total Steel Ingot Production

Calendar Years	Gross Tons
1926	46,936,205 (new record)
1927	43,776,717
1928	50,325,393 (new record)
12 months through:	
June, 1929	54,675,000 (new record)
July	55,570,000 " "
August	56,300,000 " "

It took two years, from 1926 to 1928, to raise the record by 3,400,000 tons. Now it has taken only two months to raise the record more than half as much.

Commentators in the financial columns of the daily press, noting that up to the end of August steel ingot production this year was about 6,000,000 tons more than in the first eight months of 1928, have predicted that the steel output of 1929 will exceed that of last year by 9,000,000 tons. That estimate is probably over-optimistic. It happens that the ingot production of the last four months of 1928 was about 52 per cent of that of the first eight months. But taking the average for the six years 1923-1928, inclusive, the last third provided only 48 per cent as much tonnage as the first two-thirds. If that proportion holds this year, open-hearth and Bessemer ingots should approximate 57,350,000 tons. Adding 550,000 tons for electric and crucible steel ingots, the total for the year would work out at about 57,900,000 tons, or 1,400,000 tons less than the 59,300,000 tons of the daily paper writers. That is, the output of this year would be approximately 15 per cent greater than that of 1928.

OVER-PRODUCTION, inflated prices and labor disputes do not appear in today's industrial picture; so it is commonly assumed that there is little to worry about in respect to business of the immediate future. But the doubting analyst now comes along and says, in effect: "Admitted, that manufacturers' inventories are not large, but is there not the same effect from the large volume of commodities in the hands of consumers buying on installments? Agreed, that prices have not followed upward the remarkable expansion in demand; but is not this the result of greatly enlarged capacity and does not the product of quantity and price really show inflation? To be sure, strikes are almost non-existent, but would not labor seek for more did not mechanization prevent a labor shortage?" The argument is faulty in several respects: It presupposes that installment buying extends over the whole gamut of production; it overlooks the checking influence of hand-to-mouth buying on price buoyancy; it ignores the fact that labor has a wider participation than ever in industrial enterprise and is not without the enjoyment of today's as well as yesterday's luxuries. The three items specified above by the skeptical analyst have ordinarily spelled recession and of course they need watching, especially if any one of them be disguised in the way suggested.

Automobile Consumption of Steel

PERHAPS the automobile industry's consumption of steel this year has been overestimated. From the successive annual findings of THE IRON AGE as to where steel went in the year it was long ago made clear that many popular impressions were erroneous, since our figures showed 10 per cent for 1922, increasing irregularly to a maximum of 18 per cent in 1928. There were many notions of much higher proportions —particularly in the city of Detroit.

The interesting point now is this year's proportion, which may be estimated roughly from last year's. The method naturally suggested is to compare automobile "production" last year and this with steel ingot production; but that provides only an approximation. A considerable proportion of last year's automobile steel did not go into the cars and trucks reported as produced, there being parts for replacement here and abroad, parts for foreign assembly, and accessories. Probably there was not so much growth in this consumption, outside the units produced, as there was in the number of units.

A comparison of the steel assigned to the automobile industry and the "production" of automobiles shows a steady and marked increase in the quantity of steel per unit. That is largely or wholly due to recent increases in the weight of many models, for when engines are made more powerful the car must be strengthened all around. Also there was the disappearance of the lightest car after May, 1927, with no large reappearance last year. In the first half of this year the Ford proportion was a trifle over 30 per cent, while at the present time it is close to 40 per cent. The average weight of the total car and truck production now is no doubt somewhat lower than last year's average.

For arithmetical excursions we have data as follows: In 1928, steel ingot production in the United States, 50,325,393 tons; assigned to the automobile industry by the manufacturers in reply to questionnaires, 18 per cent; car and truck production, United States and Canada, 4,601,141. First half of 1929: Ingot production 29,225,000 tons; automobile production, 3,411,753. By a simple pro-rating with these figures we obtain precisely 23 per cent as the automobile proportion of the steel in the first half of this year.

For automobile production in the last two months we have the official report of 517,792 for July and the National Automobile Chamber of Commerce statement of 516,522 for August. By a similar computation we obtain 20.7 per cent as the automobile proportion for July and August. Allowing for the increasing propor-

tion of Ford production one may take 20 per cent as the closest approximation available.

Relative to the total tonnage of steel the difference between 20 per cent and 23 per cent is not large. The 23 per cent is an average, and the peak in April was probably a trifle above 25 per cent.

There is no reason to suppose the percentages here computed are too low and they may be a trifle high. By an average of the last five years, automobile production has been substantially uniform in the four months July to October inclusive. In the last two months of the year it falls off, but the steel trade is accustomed to lighter demand all around at that time.

The Vogue of Lighter Cast Iron Pipe

IN an important foundry product the substitution of lighter material for heavier, without sacrifice of strength, is a development of the past three years. In 1926 the American Iron and Steel Institute reported 2,005,184 net tons as the production of cast iron pipe and fittings. At 1,872,000 tons in 1928 the decline in two years has been 6.5 per cent. An increase would reasonably be expected with the growth of the country and the extension of municipal gas and water lines. Imports have not increased. At 60,793 tons they were over 25 per cent less in 1928 than in 1926.

One explanation is that centrifugal pipe, which is much lighter per foot than sand cast, has displaced the latter to such an extent as to turn an apparent loss into an increase, so far as miles of pipe laid are concerned. There was more than twice as much centrifugal pipe cast in 1928 as in 1926, or about 425,000 tons against 200,000 tons, both figures being estimates. That is, the centrifugal pipe made in 1928 was 22.5 per cent of the total output of pipe, whereas in 1926 it was only 10 per cent. Thus, much the same change is gradually taking place in this field that has been so great a factor in steel, as represented in the case of the latter by the displacement of products long regarded as standard by light, strong alloy steels and aluminum alloys, all carefully heat treated.

To All These Add Courage

WITH the heading "Help Wanted—Male" the first editorial page of the Aug. 31 issue of the *Engineering and Mining Journal*, New York, is given up to a text-letter advertisement for a new staff man. The specifications, which the editor says are "meant to indicate a definite philosophy of occupation and not to serve as a description of the virtues of a paragon," are these:

> The qualifications of an engineer who seeks a career in technical journalism—beyond those that are obvious—are not easy to define, being complex and intangible. But such qualifications may be said to include the scientist's love for truth and accuracy; the engineer's ideal of efficiency and the avoidance of waste; the writer's respect for brevity and clarity; an evenness of temper that suffers, perhaps not gladly but without visible or expressed irritation, the actions and comments of those who bear out the truth of the saying that a little learning in any one subject, not excluding the business of publishing, may be dangerous; an intolerance of mediocre performance—not of mediocrity—without prejudice to a sense of personal humility; the journalist's recognition of the value of timeliness and an appreciation of the loss, moral as well as material, occasioned by procrastination; and the sane man's respect for the voluntary observance of those decent manners that lie midway between selfishly taking advantage of a liberty of opinion in expression, on the one hand, and having to submit to supervisory control or prohibition, on the other.

We do not remember to have seen any like exacting specification for the mental and moral outfit of one who might aspire to a career on the business rather than the editorial side of a technical publication. The absence of such a schedule does not argue for any indifference in respect to the equipment of those who promote the business interests of specialized journals. But when it does take form on the printed page we wonder just how far its author could venture were he to attempt to parallel this tribute of the *Engineering and Mining Journal* to the work of the technical journalist:

> No other field of human endeavor affords greater opportunities for that personal service and contribution to the social and industrial well-being of humanity, without which professional work lacks ethical appeal and justification.

CONGRATULATIONS to the *Ironmonger*, our British contemporary, which is now along with THE IRON AGE in its eighth decade. It was founded in 1859, four years after this journal, and has had a virile career, with an enviable record of reliability and helpfulness as well as robust independence.

CORRESPONDENCE

Return and Continuous Tumbling Barrels

To the Editor: We wish to call your attention to an error in the description of the tumbling barrels (in the plant of the Transue & Williams Steel Forging Corporation, THE IRON AGE, Sept. 5, page 601). You describe these as continuous tumbling barrels. These are very definitely not continuous, but are Ideal Star return tumbling barrels.

These barrels are so arranged that, when running in the tumbling direction, the work and stars are held in the tumbling compartment. When rotating in the discharge direction, the work is separated from the stars and discharged automatically. Rotating the drum again in the tumbling direction, returns the stars automatically to the tumbling compartment.

This is an entirely different machine from the continuous tumbling barrels, since it enables the work to be tumbled with an excess of stars. This causes the work to float in the stars, resulting in a more thorough and rapid cleaning and in preserving the corners of the parts from excessive rounding.

N. RANSOHOFF.
N. RANSOHOFF, INC.

Cincinnati.

Acquire Control of Donner Steel Co.

Cyrus S. Eaton and Associates of Cleveland Buy 60 Per Cent of Stock—May Mean Merger With Republic

CLEVELAND, Sept. 10.—Cyrus S. Eaton and associates of Otis & Co., Cleveland investment bankers, have acquired control of the Donner Steel Co., Buffalo, by the purchase of 60 per cent of the stock. No statement is obtainable here as to the future of the Donner company, but officials of the Republic Iron & Steel Co. are known to have looked the plant over with a view to a possible merger with Republic.

The Donner company recently purchased ground adjacent to its plant for the building of a mill addition. Equipment to be installed is to round out the range of bar sizes produced by the company, especially alloy steel bars.

Negotiations for the purchase of the Union Drawn Steel Co. by the Republic Iron & Steel Co. are still in progress. It is stated that the merger will be effected by an exchange of stock, but no official statement has been issued as to the terms.

National Metal Congress Heavily Attended

Sessions of Four National Societies and Metal Exposition Attract Many, Including Prominent Foreigners

CLEVELAND, Sept. 10.—After a welcome by W. H. White, chairman of the Cleveland chapter of the American Society for Steel Treating, the eleventh National Metal Congress and Metal Exposition was formally opened yesterday morning by Dr. Zay Jeffries, Cleveland, president of the A. S. S. T. He, in turn, welcomed the other cooperating technical societies, four in all, and declared that this year's assemblage will be the greatest meeting on metals ever held.

Technical sessions of the American Society for Steel Treating, the American Welding Society and the iron and steel divisions of the American Institute of Mining and Metallurgical Engineers and the American Society of Mechanical Engineers are in full swing and very well attended. Nearly 100 papers are scheduled for the sessions.

The exposition occupies 60,000 sq. ft. in the annex and 20,000 sq. ft. in the main part of the public auditorium. Unusual attractiveness is a feature of the displays. Prominence is given to exhibitions of rustless iron, tungsten - carbide tools and nitriding. A large number of metallurgists from abroad are present, including Dr. Adolph Fry, Krupp Laboratories, Essen, Germany; P. F. M. Aubert, of Duval & Aubert, Paris; Otto Piteasen, president German Iron and Steel Institute; Dr. E. H. Schulz, director of the research institute of the United Steel Works Corporation, Germany; Dr. F. Koerber, director, Kaiser Wilhelm Institute, Germany; Cesare Pavone, Milan, Italy; Fernand Turretini, director - general, Société Genevoise D'Instruments de Physique, Geneva, Switzerland, and C. K. Everitt, managing director and works manager, Edgar Allen & Co., Ltd., Sheffield, England. There are also one or two prominent Japanese expected. Some of the foreign visitors are on their way to the world engineering conference in Japan.

The semi-annual meeting of the American Society for Steel Treating will be held under the auspices of the New York chapter in New York, in February, the Friday and Saturday preceding the annual February meeting of the American Institute of Mining and Metallurgical Engineers. Chicago has been selected as the place for the next national metal congress, the week of Sept. 22, 1930. The congress and exposition will be at the Stevens Hotel.

New officers for the calendar year 1930 were nominated yesterday as follows: President, Robert G. Guthrie, Peoples Gas, Light & Coke Co., Chicago; vice-president, J. M. Watson, metallurgist, Hupp Motor Co., Detroit; treasurer, O. A. Fulton, Wheelock, Lovejoy & Co., Boston; directors, W. B. Coleman, W. B. Coleman Co., Philadelphia, and Roy O. E. Harder, University of Minnesota.

Dr. Albert Sauveur, Harvard University, will deliver the annual Campbell memorial lecture tomorrow morning. President Wickenden, the new head of Case School of Applied Science, Cleveland, will be the chief speaker at the banquet Thursday evening. At the joint dinner tonight of the Institute of Metals and iron and steel division of the Mining Engineers the speakers are Floyd T. Taylor, vice-president, Hanson Van Winkle, Munning Co., and Dr. H. W. Gillett, director Battelle Memorial Institute, Columbus, Ohio.

Wide interest was aroused by statement in the local papers this morning credited to G. M. Eaton, metallurgist, Molybdenum Corporation of America, Pittsburgh, that manganese-molybdenum steel is the alloy for future rails and the solution of some present track problems. A session on steel metallurgy this morning, attended by about 500, was presided over by Radcliffe Furness, Midvale Steel Co., Philadelphia, and by Dr. C. H. Herty, Jr., Pittsburgh. Some excellent papers on steel castings, on slags in open-hearth and electric furnace practice, on electric furnace steels and on locomotive forgings were presented and discussed. A report of this session will appear in THE IRON AGE Sept. 19.

Registration to date is very large for all societies, and a large majority of the prominent metallurgists from the United States is present, as well as from Canada and abroad.

To Hold Production Meeting in Cleveland

The annual national production meeting of the Society of Automotive Engineers, Inc., will be held at Cleveland, Oct. 2 and 3, in cooperation with the National Machine Tool Congress and the American Society of Mechanical Engineers. The sessions will be held in the evening and are under the general charge of E. P. Blanchard, Bullard Co., Bridgeport, Conn., who is chairman of the S. A. E. production committee.

Prof. F. E. Raymond, Massachusetts Institute of Technology, will present a paper on "Economic Production Quantities" on Wednesday evening, Oct. 2. It is anticipated that Professor Raymond's paper will be a presentation of the results of a survey he has recently completed by personal visits to a large number of the more important automobile manufacturing plants.

The Thursday evening session will be in the nature of a forum of production executives and production engineers for discussion of the following four subjects:

1. Application of standard machine tools to automobile manufacture.
2. Results in production due to new features of machine tool construction.
3. Synchronizing automobile parts at the assembling line.
4. Basis of replacing machine equipment.

On Friday evening the Cleveland sections of the Society of Automotive Engineers and the American Society of Mechanical Engineers will act jointly as hosts for the annual production dinner at the Hotel Cleveland.

Makes Tanks to Hold Helium Gas

A battery of 96 storage tanks, having a total capacity of 1,000,000 cu. ft. of helium gas, is to be furnished the Goodyear Zeppelin Corporation, Akron, Ohio, by the A. O. Smith Corporation, Milwaukee. Each tank will be 80 ft. long and 2 ft. in diameter. Two lengths of Smithweld gas line pipe are to be joined and heads welded to the ends to form each tank. The tanks will be buried under ground and suitably manifolded in groups. A similar contract, calling for 50 tanks, for installation at the Lakehurst, N. J., field, has been awarded to the A. O. Smith Corporation by the United States Navy Department.

Iron and Steel Markets

Railroad Demand Sets In

Fall Rail Buying Gets Under Way and Equipment Orders Impend, But Steel Output Declines—Heavy Steel Scrap Off 50c. at Pittsburgh

EVIDENCES of a revival in railroad buying, a slight gain in the requirements of the automotive industry and prospects for a recovery in farm machinery output are favorable straws in a steel market that is still without a well defined trend.

These developments have come too late to prevent a further decline in steel works output, but they at least indicate that the low point in demand may have been passed.

Following the placing of 30,000 tons of rails by the Reading, 75,000 tons of new inquiry has appeared, including 54,000 tons for the Chesapeake & Ohio, and fully 400,000 tons is expected to come into the market before the end of the month.

The railroad equipment outlook is also beginning to show more promise. Although buying for the week was limited to 1000 gondola cars for the St. Paul, requiring 15,000 tons of steel, new inquiries include 2000 hopper cars for the Norfolk & Western and 500 gondola car bodies for the Chicago & Easern Illinois.

While a betterment in steel demand from these and other sources is clearly in prospect, the extent of the increase cannot yet be estimated. Meanwhile mill backlogs have continued to shrink and extended deliveries have become a thing of the past.

With no incentive for forward buying, there is no rush on the part of steel consumers to place fourth quarter contracts. Although mills have actually opened their books at unchanged prices or have indicated a willingness, in many cases, to extend present quotations into the next quarter, their customers prefer to await developments. Both sellers and buyers are apparently fencing for advantage pending a test of the market.

The decline of 429,966 tons in the unfilled orders of the Steel Corporation in August was not unexpected in view of unusually large production and the steady falling off in forward commitments. While tofal unfilled business on Aug. 31, at 3,658,211 tons, was only 34,000 tons larger than a year previous, output for the month was much heavier than in 1928. Steel ingot output for all producers in August totaled 4,925,802 tons, or nearly 750,000 tons more than in the corresponding month one year ago, and in terms of daily average was less than 7 per cent short of the all-time record of last May.

With business back on a hand-to-mouth basis, production can still be large, as has been amply proved in recent years. For the current week steel ingot output ranges from 85 to 95 per cent, with some of the smaller mills running at as low as 80 per cent. Virtually all producers except the leading independent, which expects to maintain a 95 per cent operation through September, have curtailed output. The average for Steel Corporation subsidiaries is estimated at 91 per cent of capacity. Among the producing centers, the Chicago district has shown the sharpest drop, with operations now at 92 per cent compared with close to a capacity rate a week ago. Pittsburgh and Buffalo plants are running at 90 per cent.

Pig iron users, like steel buyers, are conservative in their purchases, although many of them have covered for at least a substantial part of their fourth quarter needs. The threat of Southern competition has not disappeared, and offerings of steel company iron may become more of a market factor if ingot production continues to decline.

Scrap is dull or definitely weaker in most centers, reflecting the uncertainty of steel company operations. Heavy melting steel at Pittsburgh has declined for the second week to $18.25 a ton.

A recession in plate demand at Chicago is the result of a temporary suspension of pipe line work at Milwaukee. The Wisconsin fabricator, however, has just booked 106 miles of 16-in. pipe (15,000 tons) for utilities operating in Nebraska and Oklahoma. Contracts for two pipe lines at Vancouver, British Columbia, and another at Bremerton, Wash., call for 8000 tons of plates.

Structural steel lettings, at 44,000 tons, showed a substantial gain over the previous week. Fresh inquiries call for 26,000 tons, including 9300 tons for a New York subway section.

Bars, plates and shapes at Birmingham have been reduced $2 a ton to 2.10c. a lb., cutting the differential over the Pittsburgh base from $5 to $3 a ton. Galvanized sheets at Birmingham have been marked down from 3.75c. to 3.70c. In other districts quotations announced show no change except on galvanized sheets and cold-rolled strip, on which some mills are asking an advance of $2 a ton over recent minimum prices.

Copper sales last week, at 100,000 tons, were the largest on record, with bookings about evenly divided between foreign and domestic users. The leading producer has abandoned its efforts to advance prices, which are firm at 18c., delivered Connecticut Valley, for electrolytic metal.

THE IRON AGE composite prices are unchanged at $18.25 for pig iron and 2.398c. a lb. for finished steel.

A Comparison of Prices

Market Prices at Date, and One Week, One Month and One Year Previous.
Advances Over Past Week in Heavy Type, Declines in Italics

Pig Iron,	Sept. 10, 1929	Sept. 3, 1929	Aug. 13, 1929	Sept. 11, 1928
No. 2 foundry, Philadelphia	$21.26	$21.26	$21.26	$20.26
No. 2, Valley furnace	18.50	18.50	18.50	17.00
No. 2 Southern, Cin'ti	17.19	17.19	17.69	19.94
No. 2, Birmingham	14.50	14.50	14.50	16.25
No. 2 foundry, Chicago*	20.00	20.00	20.00	18.00
Basic, del'd eastern Pa.	19.75	19.75	19.75	19.00
Basic, Valley furnace	18.50	18.50	18.50	16.25
Valley Bessemer, del'd P'gh	20.76	20.76	20.76	19.01
Malleable, Chicago*	20.00	20.00	20.00	18.00
Malleable, Valley	19.00	19.00	19.00	17.25
Gray forge, Pittsburgh	19.76	19.76	19.76	18.26
L. S. charcoal, Chicago	27.04	27.04	27.04	27.04
Ferromanganese, furnace	105.00	105.00	105.00	105.00
Rails, Billets, Etc., Per Gross Ton:				
Rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Light rails at mill	36.00	36.00	36.00	36.00
Rerolling billets, Pittsburgh	35.00	35.00	35.00	32.00
Sheet bars, Pittsburgh	35.00	35.00	35.00	32.00
Slabs, Pittsburgh	35.00	35.00	35.00	32.00
Forging billets, Pittsburgh	40.00	40.00	40.00	38.00
Wire rods, Pittsburgh	42.00	42.00	42.00	42.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb.	1.85	1.85	1.85	1.90
Finished Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Bars, Pittsburgh	1.95	1.95	1.95	1.90
Bars, Chicago	2.05	2.05	2.05	2.00
Bars, Cleveland	1.95	1.95	1.95	1.85
Bars, New York	2.29	2.29	2.29	2.24
Tank plates, Pittsburgh	1.95	1.95	1.95	1.90
Tank plates, Chicago	2.05	2.05	2.05	2.00
Tank plates, New York	2.22½	2.22½	2.22½	2.17½
Structural shapes, Pittsburgh	1.95	1.95	1.95	1.90
Structural shapes, Chicago	2.05	2.05	2.05	2.00
Structural shapes, New York	2.19½	2.19½	2.19½	2.17½
Cold-finished bars, Pittsburgh	2.30	2.30	2.30	2.10
Hot-rolled strips, Pittsburgh	1.90	1.90	1.90	1.75
Cold-rolled strips, Pittsburgh	2.75	2.75	2.75	2.75

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

Finished Steel,	Sept. 10, 1929	Sept. 3, 1929	Aug. 13, 1929	Sept. 11, 1928
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 24, P'gh	2.85	2.85	2.85	2.65
Sheets, black, No. 24, Chicago dist. mill	2.95	2.95	2.95	2.75
Sheets, galv., No. 24, P'gh	3.50	3.50	3.50	3.40
Sheets, galv., No. 24, Chicago dist. mill	3.60	3.60	3.60	3.60
Sheets, blue, No. 13, P'gh	2.35	2.35	2.35	2.00
Sheets, blue, No. 13, Chicago dist. mill	2.45	2.45	2.45	2.10
Wire nails Pittsburgh	2.55	2.55	2.55	2.55
Wire nails, Chicago dist. mill	2.60	2.60	2.60	2.60
Plain wire, Pittsburgh	2.40	2.40	2.40	2.40
Plain wire, Chicago dist. mill	2.45	2.45	2.45	2.45
Barbed wire, galv., Pittsburgh	3.20	3.20	3.20	3.20
Barbed wire, galv., Chicago dist. mill	3.30	3.30	3.30	3.25
Tin plate, 100 lb. box, P'gh	$5.35	$5.35	$5.35	$5.25
Old Material, Per Gross Ton:				
Heavy melting steel, P'gh	$18.25	$18.75	$19.25	$16.75
Heavy melting steel, Phila	16.50	16.50	16.50	15.00
Heavy melting steel, Ch'go	15.25	15.25	15.00	13.00
Carwheels, Chicago	14.00	14.00	14.00	13.50
Carwheels, Philadelphia	16.50	16.50	16.50	15.50
No. 1 cast, Pittsburgh	15.50	15.50	15.50	15.00
No. 1 cast, Philadelphia	16.50	16.50	16.50	16.00
No. 1 cast, Ch'go (net ton)	14.50	14.50	14.50	15.00
No. 1 RR. wrot., Phila	16.00	16.00	16.00	14.00
No. 1 RR. wrot., Ch'go (net)	14.00	14.00	14.00	12.00
Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	$2.65	$2.65	$2.75	$2.75
Foundry coke, prompt	3.75	3.75	3.75	3.75
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	18.12½	18.12½	18.12½	14.75
Electrolytic copper, refinery	17.75	17.75	17.75	14.50
Tin (Straits), New York	45.37½	45.50	46.37½	47.12½
Zinc, East St. Louis	6.80	6.80	6.80	6.25
Zinc, New York	7.15	7.15	7.15	6.60
Lead, St. Louis	**6.70**	6.55	6.55	6.25
Lead, New York	**6.90**	6.75	6.75	6.40
Antimony (Asiatic), N. Y.	**8.75**	8.62½	8.75	10.62½

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Pittsburgh

Ingot Output Above 90 Per Cent, But Orders Are Needed—Scrap Declines 50c. a Ton

PITTSBURGH, Sept. 10.—Following a slight dip last week brought about by the holiday and the extremely hot weather, steel ingot production in this district is again above 90 per cent of capacity, with the Steel Corporation subsidiaries closer to 95 per cent. Youngstown district companies are at a slightly lower rate, while plants down the Ohio River have not curtailed their steel output. In many cases, however, operations are rapidly approaching a hand-to-mouth basis and nearly all of the large independent companies are badly in need of tonnage for their finishing mills.

Reserve supplies of semi-finished steel have again reached normal levels and immediate deliveries may be had on this material as well as on all finished products, with the exception of sheets. In the face of declining demand, buyers are again taking an interest in prices, and with fourth quarter figures yet to be officially announced on leading products, steel makers are making strong efforts to hold present quotations for the final three months of the year. Thus far they have apparently been successful. No pronounced weakness has developed in the last week.

Independent makers of sheets have refused to make fourth quarter contracts at less than 2.85c. on black and 3.60c. on galvanized. In the East, concessions of $1 a ton are occasionally reported on bars, but the price is holding in the natural Pittsburgh territory. Nail prices are still soft at points down the Ohio River, but the $2.55 minimum is holding in this district. The $35 quotation on billets and slabs has not yet been tested on fourth quarter business.

Prospects for heavier buying of steel next month have not improved. Schedules of the Ford Motor Co. for October call for an operation of only five days a week, as compared with six days in the last few months, and its steel requirements will be correspondingly reduced. The other large maker of low-priced cars is expected to take less steel than it is taking this month. Declines from these sources will hardly be offset by increased production of cars in the medium-priced field.

Heavier demand from other large steel consuming industries is still a matter of conjecture. Under such circumstances, sentiment in the steel market no longer carries the optimism of a month ago. While there is no expectation of any pronounced falling off in business this fall, there is a growing belief that a gradual tapering off may continue well into the last quarter of the year.

Reflecting the uncertainty of steel plant operations, the scrap market is definitely weaker. Heavy melting steel is off 50c. a ton, with buying by mills at a standstill and dealers extremely eager to obtain orders. Other grades of scrap are correspondingly soft.

Pig Iron.—Fourth quarter buying has not begun to develop to any large extent, but a fair volume of small orders is coming to local furnace agents, and the aggregate sold during the last week was the highest in some time. Large inquiries seem to be few, although a radiator manufacturer at Uniontown, Pa., is inquiring for 4400

tons of No. 2 plain, and 900 tons of No. 2 X. Other sizable inquiries, if they exist, are not general. In the Valleys, prices are reported to be holding at $18.50, furnace, for basic and foundry iron and at $19 for malleable and Bessemer. Recent sales in that territory have fully justified these quotations, but there is question as to the strength of Pittsburgh delivered prices. A recent transaction in this market is said to have brought out a lower figure than the Neville furnace base plus the freight rate to the point of delivery. The position of merchant furnaces is rather favorable, as stocks are low and order books still are large in some instances. Steel company iron has not become a factor in the market, although there are reports that tonnages will soon be offered if ingot production in the district is curtailed much further.

Prices per gross ton, f.o.b. Valley furnace:

Basic	$18.50
Bessemer	19.00
Gray forge	18.00
No. 2 foundry	18.50
No. 3 foundry	18.00
Malleable	19.00
Low phos., copper free	27.00

Freight rate to Pittsburgh or Cleveland district, $1.76.

Prices per gross ton, f.o.b. Pittsburgh district furnace:

Basic	$19.00
No. 2 foundry	19.00
No. 3 foundry	18.50
Malleable	19.50

Freight rates to points in Pittsburgh district range from 63c. to $1.13.

Semi-Finished Steel.—Buyers of crude steel are not yet showing any interest in their fourth quarter needs, as they are at present very much in doubt as to how large these will be. They have plenty of steel on hand, as in many cases production of finished products was curtailed more rapidly during the last month than shipments of billets and slabs. Sellers are at present taking a firmer price stand on spot shipments and say that the price for the closing months of the year on contract tonnage will be at $35 for billets, slabs and sheet bars, and $40 for forging billets. These prices, representing as they do an advance over the first half of the year, on billets and slabs, are not satisfactory to consumers who are getting no more for their finished products. Under the circumstances, the price situation bears elements of uncertainty. Wire rods are not moving as actively as they were in the summer, but there is still a fair demand and apparently no question about the $42, Pittsburgh or Cleveland, quotation.

Bars, Plates and Shapes.—Deliveries on the heavy hot-rolled products are still improving, and the tight situation in plates, which has existed for several months, is beginning to ease. Pittsburgh mills are no longer receiving plate tonnage from the Chicago district, and, although the demand of local consumers has not been curtailed much, production is fully equal to the present demand. Structural awards in this district have been rather light for several weeks, and backlogs of fabricating shops are gradually dwindling. Only the larger interests are able to see ahead more than a month, and a few of the smaller units are quite anxious for business. Barge shop operations are still high, but in another six or eight weeks present commitments will be about worked off, with a consequent diminishing demand for steel. Merchant bars are quiet and business is now largely on a hand-to-mouth basis. There is more activity in reinforcing bars, although makers are now able to divert tonnage to this use which ordinarily went to other departments and are gradually improving deliveries. Fourth quarter prices have not been announced, but it is generally expected that there will be no change from the present quotation of 1.95c., Pittsburgh, on bars, plates and shapes.

Rails and Track Accessories.—This is ordinarily one of the dull periods of the year. Considering this, specifications are coming in at a satisfactory rate and shipments are holding up fairly well. The Reading Railroad has placed 30,000 tons of rails, of which 24,000 tons went to the Bethlehem Steel Co. and 6000 tons to the local mill. Rail inquiries have not yet begun to appear, but a number of roads are said to be preparing their requirements and are expected to come into the market earlier than usual.

Wire Products.—Local producers of wire have not yet definitely determined fourth quarter quotations, and the present instability in prices has apparently held up buying in many cases. Shipments of manufacturing wire are sustained, and there has been no marked curtailment in specifications. Jobber business is very quiet in both wire and nails. Present quotations range from $2.55 to $2.65 a keg on nails and 2.40c. to 2.50c. base a lb. on wire.

Tubular Goods.—The pipe market is rather dull from a standpoint of unusual developments, although business in both lap-welded and seamless tubing is coming in at a steady rate, and mill operations are comparatively high. On butt-weld pipe demand is quiet, and local makers can see no signs of definite improvement in the near future. Production of mechanical tubing has been curtailed on account of the reduced requirements of the automobile industry, but improved demand is expected within a month.

Sheets.—Sheet manufacturers have not officially opened their books for fourth quarter, but most of them have assumed a willingness to take business at present maximum quotations. The 2.85c., Pittsburgh, price on black sheets has been fairly well established for several weeks, but a quotation of 3.60c. on galvanized sheets will represent an advance to some consumers who have been able to buy during the present quarter at 3.50c. On light plates, blue annealed, the fourth quarter quotation will be 2.20c., Pittsburgh, for the No. 10 gage, while blue annealel sheets, No. 13 gage, will be unchanged at 2.35c. Local makers have maintained these quotations rather firmly during the present quarter, although concessions of $2 a ton have been reported from other districts. A few large users have recently been able to buy automobile body sheets at as low as 4c., Pittsburgh, but this concession represents the usual preferential offered to very large buyers and does not represent any marked weakness. Quotations of less than 3c., Pittsburgh, on tin mill black plate have never been admitted as representative of the market by some makers, and this price will be quoted on fourth quarter busi-

The Iron Age Composite Prices

Finished Steel

Sept. 10, 1929, 2.398c. a Lb.

One week ago	2.398c.
One month ago	2.398c.
One year ago	2.348c.
10-year pre-war average	1.689c.

Based on steel bars, beams, tank plates, wire, rails, black pipe and black sheets. These products make 87 per cent of the United States output of finished steel.

	High		Low	
1929	2.412c.,	April 2;	2.391c.,	Jan. 8
1928	2.394c.,	Dec. 11;	2.314c.,	Jan. 3
1927	2.453c.,	Jan. 4;	2.293c.,	Oct. 25
1926	2.453c.,	Jan. 5;	2.403c.,	May 18
1925	2.560c.,	Jan. 6;	2.396c.,	Aug. 18

Pig Iron

Sept. 10, 1929, $18.25 a Gross Ton

One week ago	$18.25
One month ago	18.42
One year ago	17.46
10-year pre-war average	15.72

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

	High		Low	
1929	$18.71,	May 14;	$18.25,	Aug. 27
1928	18.59,	Nov. 27;	17.04,	July 24
1927	19.71,	Jan. 4;	17.54,	Nov. 1
1926	21.54,	Jan. 5;	19.46,	July 13
1925	22.50,	Jan. 13;	18.96,	July 7

Mill Prices of Finished Iron and Steel Products

Iron and Steel Bars

Soft Steel

	Base per Lb.
F.o.b. Pittsburgh mill	1.95c.
F.o.b. Chicago	2.05c.
Del'd Philadelphia	2.27c.
Del'd New York	2.29c.
Del'd Cleveland	1.92½c. to 1.95c.
F.o.b. Cleveland	1.90c. to 1.95c.
F.o.b. Lackawanna	2.05c.
F.o.b. Birmingham	2.10c.
C.i.f. Pacific ports	2.35c.
F.o.b. San Francisco mills	2.35c. to 2.40c.

Billet Steel Reinforcing

F.o.b. Pittsburgh mills, 40, 50, 60-ft.	2.05c.
F.o.b. Pittsburgh mills, cut lengths	2.30c.
F.o.b. Birmingham, mill lengths	2.10c.

Rail Steel

F.o.b. mills, east of Chicago dist.	1.85c. to 1.90c.
F.o.b. Chicago Heights mill	1.95c.
Del'd Philadelphia	2.27c.

Iron

Common iron, f.o.b. Chicago	2.05c.
Refined iron, f.o.b. P'gh mills	2.75c.
Common iron, del'd Philadelphia	2.12c.
Common iron, del'd New York	2.14c.

Tank Plates

	Base per Lb.
F.o.b. Pittsburgh mill	1.95c.
F.o.b. Chicago	2.05c.
F.o.b. Birmingham	2.10c.
Del'd Cleveland	2.14c.
Del'd Philadelphia	2.15c.
F.o.b. Coatesville	2.05c.
F.o.b. Sparrows Point	2.05c.
F.o.b. Lackawanna	2.05c.
Del'd New York	2.22½c.
C.i.f. Pacific ports	2.35c.

Structural Shapes

	Base per Lb.
F.o.b. Pittsburgh mill	1.95c.
F.o.b. Chicago	2.05c.
F.o.b. Birmingham	2.10c.
F.o.b. Lackawanna	2.05c.
F.o.b. Bethlehem	2.05c.
Del'd Cleveland	2.14c.
Del'd Philadelphia	2.01c. to 2.06c.
Del'd New York	2.14½c.
C.i.f. Pacific ports	2.35c.

Hot-Rolled Hoops, Bands and Strips

	Base per Lb.
6 in. and narrower, P'gh	2.00c.
Wider than 6 in., P'gh	1.90c.
6 in. and narrower, Chicago	2.20c.
Wider than 6 in., Chicago	2.10c.
Cooperage stock, P'gh	2.20c.
Cooperage stock, Chicago	2.30c.

Cold-Finished Steel

	Base per Lb.
Bars, f.o.b. Pittsburgh mill	2.30c.
Bars, f.o.b. Chicago	2.30c.
Bars, Cleveland	2.35c.
Shafting, ground, f.o.b. mill	*2.65c. to 3.60c.
Strips, P'gh	2.75c. to 2.85c.
Strips, Cleveland	2.75c. to 2.85c.
Strips, del'd Chicago	3.05c. to 3.15c.
Strips, Worcester	2.90c. to 3.00c.
Fender stock, No. 20 gage, Pittsburgh or Cleveland	4.25c.

*According to size.

Wire Products

(Carload lots, f.o.b. Pittsburgh and Cleveland, to jobbers and retailers.)

	Base per Keg
Wire nails	$2.55 to $2.65
Galvanized nails	4.55 to 4.65
Galvanized staples	3.25 to 3.35
Polished staples	3c. to 3.10c.
Cement coated nails	$2.55 to $2.65
	Base per 100 Lb.
Bright plain wire, No. 6 to No. 9 gage	$2.40 to $2.50
Annealed fence wire	2.55 to 2.65
Spring wire	3.50 to 3.60
Galv'd wire, No. 9	3.00 to 3.10
Barbed wire, galv'd	3.20 to 3.30
Barbed wire, painted	2.95 to 3.05
Woven wire fence (per net ton to retailers)	65.00

Chicago district mill and delivered Chicago prices are $1 per ton above the foregoing. Birmingham mill prices $3 a ton higher; Worcester, Mass. (wire), mill $3 a ton higher on production of that plant; Duluth, Minn., mill $2 a ton higher; Anderson, Ind., $1 higher.

Cut Nails

	Per 100 Lb.
Carloads, Wheeling, Reading or Northumberland, Pa.	$2.70
Less carloads, Wheeling or Reading	2.80

Light Plates

No. 10, blue annealed, f.o.b. P'gh.	2.10c. to 2.20c.
No. 10, blue annealed, f.o.b. Chicago dist.	2.30c.
No. 10, blue annealed, del'd Phila.	2.42c. to 2.52c.
No. 10, blue annealed, B'ham	2.35c.

Sheets

Blue Annealed

	Base per Lb.
No. 13, f.o.b. P'gh	2.25c. to 2.35c.
No. 13, f.o.b. Chicago dist	2.45c.
No. 13, del'd Philadelphia	2.67c.
No. 13, blue annealed, B'ham	2.50c.

Box Annealed, One Pass Cold Rolled

No. 24, f.o.b. Pittsburgh	2.85c.
No. 24, f.o.b. Chicago dist. mill	2.95c. to 3.00c.
No. 24, del'd Philadelphia	3.17c. to 3.27c.
No. 24, f.o.b. Birmingham	3.10c.

Metal Furniture Sheets

No. 24, f.o.b. P'gh	4.10c. to 4.20c.

Galvanized

No. 24, f.o.b. Pittsburgh	3.50c. to 3.60c.
No. 24, f.o.b. Chicago dist. mill	3.60c. to 3.70c.
No. 24, del'd Cleveland	3.59c. to 3.69c.
No. 24, del'd Philadelphia	3.92c. to 4.02c.
No. 24, f.o.b. Birmingham	3.70c.

Tin Mill Black Plate

No 28, f.o.b. Pittsburgh	2.90c. to 3.00c.
No. 28, f.o.b. Chicago dist. mill	3.00c. to 3.10c.

Automobile Body Sheets

No. 20, f.o.b. Pittsburgh	4.00c. to 4.10c.

Long Ternes

No. 24, 8-lb. coating, f.o.b. mill	4.00c. to 4.10c.

Vitreous Enameling Stock

No. 24, f.o.b. Pittsburgh	3.90c.

Tin Plate

	Per Base Box
Standard cokes, f.o.b. P'gh district mills	$5.35
Standard cokes, f.o.b. Gary	5.45

Terne Plate

(*F.o.b. Morgantown or Pittsburgh*)
(Per Package, 20 x 28 in.)

8-lb. coating I.C.	$11.20
15-lb. coating I.C.	14.00
20-lb. coating I.C.	15.30
25-lb. coating I.C.	$16.70
30-lb. coating I.C.	17.75
40-lb. coating I.C.	19.85

Alloy Steel Bars

(F.o.b. makers' mill)

Alloy Quality Bar Base, 2.65c. to 2.75c. per Lb.

S.A.E. Series Numbers		Alloy Differential
2000	(1¼% Nickel)	$0.25
2100	(1½% Nickel)	0.55
2300	(3½% Nickel)	1.50
2500	(5% Nickel)	2.25
3100	Nickel Chromium	0.55
3200	Nickel Chromium	1.35
3300	Nickel Chromium	3.80
3400	Nickel Chromium	3.20
4100	Chromium Molybdenum (0.15 to 0.25 Molybdenum)	0.50
4100	Chromium Molybdenum (0.25 to 0.40 Molybdenum)	0.70
4600	Nickel Molybdenum (0.20 to 0.30 Molybdenum, 1.25 to 1.75 Nickel)	1.05
5100	Chromium Steel (0.60 to 0.90 Chromium)	0.35
5100	Chromium Steel (0.80 to 1.10 Chromium)	0.45
5100	Chromium Spring Steel	0.20
6100	Chromium Vanadium Bars	1.20
6100	Chromium Vanadium Spring Steel	0.95
9250	Silicon Manganese Spring Steel (flats)	0.25
	Rounds and squares	0.50
	Chromium Nickel Vanadium	1.50
	Carbon Vanadium	0.95

Above prices are for hot rolled steel bars, forging quality. The differential for cold-drawn bars is ¾c. a lb. higher, with standard classification for cold-finished alloy steel bars applying. For billets 4 x 4 to 10 x 10 in., the price for a gross ton is the net price for bars of the same analysis.

Billets under 4 x 4 in. carry the steel bar base. Slabs with a sectional area of 16 in. or over carry the billet price. Slabs with sectional area of less than 16 in. or less than 2½ in. thick, regardless of sectional area, take the bar price.

Rails

	Per Gross Ton
Standard, f.o.b. mill	$43.00
Light (from billets), f.o.b. mill	36.00
Light (from rail steel), f.o.b. mill	34.00
Light (from billets), f.o.b. Ch'go mill	36.00

Track Equipment

	Base per 100 Lb.
Spikes, ⅝ in. and larger	$2.80
Spikes, ½ in. and smaller	2.80
Spikes, boat and barge	3.00
Tie plate, steel	2.15
Angle bars	$2.75
Track bolts, to steam railroads	$3.80 to 4.00
Track bolts, to jobbers, all sizes, per 100 count	70 per cent off list

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Butt Weld

Steel Inches	Black	Galv.	Iron Inches	Black	Galv.
⅛	45	19½	¼ and ⅜	+11	+36
¼ to ⅜	51	25½	½	23	5
½	56	42½	¾	28	11
¾	60	48½	1 and 1¼	31	15
1 to 3	62	50½	1½ and 2	35	18

Lap Weld

2	55	43½	2	23	9
2½ to 6	59	47½	2½ to 3½	28	13
7 and 8	56	43½	4 to 6	30	17
9 and 10	54	42½	7 and 8	29	16
11 and 12	53	40½	9 to 12	26	11

Butt Weld, extra strong, plain ends

⅛	41	24½	¼ and ⅜	+13	+48
¼ to ⅜	47	30½	½	23	7
½	53	42½	¾	28	12
¾	58	47½	1 to 2	34	18
1 to 1½	60	49½			
2 to 3	61	50½			

Lap Weld, extra strong, plain ends

2	53	42½	½	29	13
2½ to 4	57	46½	2½ to 4	34	20
4½ to 6	56	45½	4½ to 6	33	19
7 to 8	52	39½	7 and 8	31	17
9 and 10	45	32½	9 to 12	21	8
11 and 12	44	31½			

On carloads the above discounts on steel pipe are increased on block by one point, with supplementary discount of 5%, and on galvanized by 1½ points, with supplementary discount of 5%. On iron pipe, both black and galvanized, the above discounts are increased to jobbers by one point with supplementary discounts of 5 and 2½%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

Steel		Charcoal Iron	
2 in. and 2¼ in.	40	1½ in.	1
2½ in.—2¾ in.	48	1¾ in.	8
3 in.	54	2 in.—2¼ in.	13
3½ in.—3¾ in.	56	2½ in.—2¾ in.	16
4 in.	59	3 in.	17
4½ in. to 6 in.	48	3½ in. to 3½ in.	18
		4 in.	20
		4½ in.	21

On lots of a carload or more, the above base discounts are subject to a preferential of two fives on steel and of 10 per cent on charcoal iron tubes. Smaller quantities are subject to the following modifications from the base discounts:

Lap Welded Steel—Under 10,000 lb., 6 points under base and one five; 10,000 lb. to carload, 4 points under base and two fives. Charcoal Iron—Under 10,000 lb., 2 points under base; 10,000 lb. to carload, base and one five.

Standard Commercial Seamless Boiler Tubes

Cold Drawn			
1 in.	63	3 in.	48
1¼ to 1½ in.	55	3¼ to 3½ in.	50
1¾ in.	39	4 in.	53
2 to 2¼ in.	34	4½, 5 and 6 in.	42
2½ to 2¾ in.	42		

Hot Rolled			
2 and 2¼ in.	40	3¼ to 3½ in.	56
2½ and 2¾ in.	48	4 in.	59
3 in.	54	4½, 5 and 6 in.	48

Beyond the above base discounts a preferential discount of 5 per cent is allowed on carload lots. On less than carloads to 10,000 lb., base discounts are reduced 4 points with 5 per cent preferential; on less than 10,000 lb., base discounts are reduced 6 points, with no preferential. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage take mechanical tube list and discounts. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

	Per Cent Off List
Carbon, 0.10% to 0.30%, base (carloads)	55
Carbon, 0.30% to 0.40%, base	50

Plus differentials for lengths over 18 ft. and for commercial exact lengths. Warehouse discounts on small lots are less than the above.

ness. Specifications on sheets are somewhat lighter and deliveries on nearly all the common finishes, except occasionally blue annealed, can be had in three to four weeks. Backlogs are still declining, although hot weather seriously curtailed operations last week. For the present week the leading interest has scheduled its mills at just under 100 per cent of capacity.

Tin Plate.—Operations of all the leading independent companies have fallen under 75 per cent and some are closer to 50 per cent. The largest producer, however, plans to run its mills at better than 85 per cent this week. This figure includes the Chicago district, where curtailment has not been as marked as around here. During the corresponding dull period in other years some companies have been able to roll considerable export tonnage, but this year's exports are smaller than usual on account of the low-priced competition of foreign makers.

Strip Steel.—Demand has shown no further decline since the first of the month, and some makers report a beginning improvement in the specifications of automobile makers. Nevertheless any important increase in demand from this source before October would be a surprise to local mills which expect a quiet month. Strip mill operations are not higher than 75 per cent of capacity in this and nearby districts. Prices seem to be holding and makers are anxious to maintain present schedules on fourth quarter contract tonnage.

Cold-Finished Steel Bars.—No new activity has developed in this market, but business has shown little decline from recent levels and conditions are generally satisfactory. Makers are beginning to make fourth quarter contracts at unchanged prices, although the new extras announced last July will apply on this business.

Cotton Ties.—Buying of cotton ties has been practically concluded for the season, and total tonnage to be shipped will be approximately the same as last year. However, Pittsburgh mills took a comparatively smaller tonnage, the bulk of the business having gone to makers at Atlanta, Ga., and Birmingham and to foreign producers. The price this year was established by the importers at $1.05 per 45-lb. bundle, f.o.b. Gulf ports. Southern and Pittsburgh mills met this figure on most of the business. In future, Pittsburgh district producers expect to reduce their tonnage still further as they cannot compete profitably with the Southern or imported product at present price levels.

Old Material.—The scrap market has taken a definitely weaker turn and prices have declined at least 50c. a ton on all the principal grades. The Pennsylvania Railroad list, which was sold last week, is said to have brought figures ranging from $18.75 to slightly over $19 for steel scrap, while the Baltimore & Ohio list, which closed yesterday, did not bring more than $18.75. As heavy melting steel is offered freely at $18.50 and less, and may be picked up by local dealers at $18, the market is now quotable at $18 to $18.75, with an average tending toward the lower figure. In the absence of mill buying, it is difficult to quote the market with any certainty, although eagerness to sell on the part of the dealers is undoubtedly responsible for the weakness which has become accentuated in the last two days. Hydraulic compressed sheets are nominally quoted at $18 to $18.50, a decline of 25c. from recent levels, and lighter steel works grades, such as short shoveling steel turnings and machine shop turnings, are off 50c. and 75c.

Prices per gross ton delivered consumers' yards in Pittsburgh and points taking the Pittsburgh district freight rate:

Basic Open-Hearth Grades:	
No. 1 heavy melting steel	$18.00 to $18.75
No. 2 heavy melting steel	16.00 to 16.50
Scrap rails	17.50 to 18.00
Compressed sheet steel	18.00 to 18.50
Bundled sheets, sides and ends	16.50 to 17.00
Cast iron carwheels	16.50 to 17.00
Sheet bar crops, ordinary	19.50 to 20.00
Heavy breakable cast	12.50 to 13.00
No. 2 railroad wrought	18.00 to 18.50
Hvy. steel axle turnings	16.50 to 17.00
Machine shop turnings	11.75 to 12.25
Acid Open-Hearth Grades:	
Railr. knuckles and couplers	21.50 to 22.00
Railr. coil and leaf springs	21.50 to 22.00
Rolled steel wheels	21.50 to 22.00
Low phos. billet and bloom ends	22.00 to 22.50
Low phos., mill plates	22.00 to 22.50
Low phos., light grades	20.50 to 21.50
Low phos., sheet bar crops	20.50 to 21.50
Heavy steel axle turnings	16.50 to 17.00
Electric Furnace Grades:	
Low phos., punchings	20.00 to 21.00
Hvy. steel axle turnings	16.50 to 17.00
Blast Furnace Grades:	
Short shoveling steel turnings	12.50 to 13.00
Short mixed borings and turnings	12.00 to 12.50
Cast iron borings	12.00 to 12.50
Rolling Mill Grades:	
Steel car axles	21.50 to 22.00
Cupola Grades:	
No. 1 cast	15.00 to 16.00
Rails 3 ft. and under	20.00 to 21.00

Warehouse Business. — Sales of many products have shown a slight improvement since Labor Day, and further increase in volume of business is expected this month. Prices on sheets and wire products are rather soft, reflecting weakness in mill quotations, but many distributers are still quoting recent maximum prices on the usual run of business. Bolt and nut prices are firm and demand is fair. Sales of roofing are improving.

Coal and Coke.—Weakness in the furnace coke market is gradually being corrected by curtailment of production, more than 500 ovens having been put out in the Connellsville district last week. The market is still quotable at $2.65 to $2.75, Connellsville, although the higher figure is being done on very little business and $2.60 has been done on some occasions. Foundry coke prices are also weak, but there are occasional reports of improved demand. The premium brands are holding at $4.85, ovens. Fall demand for coal is increasing, but the market has shown little price strength.

Warehouse Prices, f.o.b. Pittsburgh

	Base per Lb.
Plates	3.00c.
Structural shapes	3.00c.
Soft steel bars and small shapes	2.90c.
Reinforcing steel bars	2.75c.
Cold-finished and screw stock—	
Rounds and hexagons	3.60c.
Squares and flats	4.10c.
Bands	3.25c.
Hoops	4.25c.
Black sheets (No. 24), 25 or more bundles	3.80c. to 3.90c.
Galv. sheets (No. 24), 25 or more bundles	4.45c. to 4.55c.
Light plates, blue annealed (No. 10), 1 to 24 plates	3.35c. to 3.45c.
Blue annealed sheets (No. 13), 1 to 24 sheets	3.50c. to 3.60c.
Galv. corrug. sheets (No. 28), per square	$4.43
Spikes, large	3.40c.
Small	3.80c. to 5.25c.
Boat	3.80c.
Track bolts, all sizes, per 100 count,	60 per cent off list
Machine bolts, 100 count,	60 per cent off list
Carriage bolts, 100 count,	60 per cent off list
Nuts, all styles, 100 count,	60 per cent off list
Large rivets, base per 100 lb.	$3.50
Wire, black soft, ann'l'd, base per 100 lb.	$3.00 to 3.10
Wire, galv. soft, base per 100 lb.	3.00 to 3.10
Common wire nails, per keg	2.90 to 3.00
Cement coated nails, per keg	3.05

Wire Mesh Prices Reduced Sharply

On Sept. 5 the John M. Hart Co., 435 Lexington Avenue, New York, distributer of Hanover wire cloth, announced new opening prices for the season of 1930 on copper and bronze mesh. The new prices are not only reductions from the former f.o.b. mill quotations, but include freight allowances on carload lots to all points on and east of the Mississippi River, including Duluth, St. Louis and New Orleans.

On less than carload lots the new prices include a freight allowance not exceeding 80c. per 100 lb. from Hanover, Pa. On shipments to consumers west of the Mississippi River the freight allowance in the new prices on both carload and less than carload lots is $1.07 per 100 lb., which is the carload freight rate from Hanover, Pa., to St. Louis. As about 75 per cent of the business in copper and bronze wire screen cloth is in the freight allowance territory, the new basis of quoting represents a considerable reduction to consumers.

The terms are net payment in 60 days, or 2 per cent discount for cash in 10 days, with all business dated March 1, 1930. Where prepayment is made the prepayment discount is 6 per cent per annum.

The new prices, which include freight allowance, are on copper mesh, $5 per 100 sq. ft. for No. 14, $5.40 per 100 sq. ft. for No. 16 and $5.65 per 100 sq. ft. for No. 18.

On bronze mesh the quotations are $5.35 per 100 sq. ft. for No. 14, $5.70 for No. 16 and $6 for No. 18. An allowance of 5c. per 100 sq. ft. is given on large rolls of about 300 lin. ft. and 7c. per 100 sq. ft. is allowed on cloth which is not boxed.

A two-year research program in lubrication is planned by a special research committee on lubrication of the American Society of Mechanical Engineers. It calls for an expenditure of $20,000.

Semi-Finished Steel, Raw Materials, Bolts and Rivets

Mill Prices of Semi-Finished Steel

Billets and Blooms

	Per Gross Ton
Rerolling, 4-in. and under 10 in., Pittsburgh	$35.00
Rerolling, 4-in. and under 10 in., Youngstown	35.00
Rerolling, 4-in. and under 10 in., Cleveland	35.00
Rerolling, 4-in. and under 10 in., Chicago	37.00
Forging quality, Pittsburgh	$40.00 to 41.00

Sheet Bars

(Open Hearth or Bessemer)

	Per Gross Ton
Pittsburgh	$35.00
Youngstown	35.00
Cleveland	35.00

Slabs

(8 in. x 2 in. and under 10 in. x 10 in.)

	Per Gross Ton
Pittsburgh	$35.00
Youngstown	35.00
Cleveland	35.00

Skelp

(F.o.b. Pittsburgh or Youngstown)

	Per Lb.
Grooved	1.85c. to 1.90c.
Universal	1.85c. to 1.90c.
Sheared	1.85c. to 1.90c.

Wire Rods

(Common soft, base)

	Per Gross Ton
Pittsburgh	$42.00
Cleveland	42.00
Chicago	43.00

Prices of Raw Material

Ores

Lake Superior Ores, Delivered Lower Lake Ports

	Per Gross Ton
Old range Bessemer, 51.50% iron	$4.80
Old range non-Bessemer, 51.50% iron	4.65
Mesabi Bessemer, 51.50% iron	4.65
Mesabi non-Bessemer, 51.50% iron	4.50
High phosphorus, 51.50% iron	4.40

Foreign Ore, c.i.f. Philadelphia or Baltimore

	Per Unit
Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algerian	12.00c.
Iron ore, low phos., Swedish, average 68% iron	12.50c.
Iron ore, basis Swedish, average 65% iron	11.00c.
Manganese ore, washed, 52% manganese, from the Caucasus	32.00c. to 33.00c.
Manganese ore, Brazilian, African or Indian, basic 50%	33.00c.
Tungsten ore, high grade, per unit, in 60% concentrates	$16.25 to $16.50

	Per Gross Ton
Chrome ore, 45 to 50% Cr_2O_3, crude, c.i.f. Atlantic seaboard	$22.00 to $24.00

	Per Lb.
Molybdenum ore, 85% concentrates of MoS_2, delivered	50c. to 55c.

Coke

	Per Net Ton
Furnace, f.o.b. Connellsville prompt	$2.65 to $2.75
Foundry, f.o.b. Connellsville prompt	3.75 to 4.75
Foundry, by-product, Ch'go ovens	8.00
Foundry, by-product, New England, del'd	11.00
Foundry, by-product, Newark or Jersey City, delivered	9.00 to 9.40
Foundry, by-product, Phila.	9.00
Foundry, Birmingham	5.00
Foundry, by-product, St. Louis, f.o.b. ovens	8.00
Foundry by-prod., del'd St. Louis	9.00

Coal

	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines	$1.25 to $1.75
Mine run coking coal, f.o.b. W. Pa. mines	1.50 to 1.75
Gas coal, ¾-2in. f.o.b. Pa. mines	1.90 to 2.00
Mine run gas coal, f.o.b. Pa. mines	1.65 to 1.75
Steam slack, f.o.b. W. Pa. mines	80c. to 90c.
Gas slack, f.o.b. W. Pa. mines	1.00 to 1.10

Ferromanganese

	Per Gross Ton
Domestic, 80%, seaboard	$105.00
Foreign, 80%, Atlantic or Gulf port, duty paid	105.00

Spiegeleisen

	Per Gross Ton Furnace
Domestic, 19 to 21%	$31.00 to $34.00
Domestic, 16 to 19%	29.00 to 32.00

Electric Ferrosilicon

	Per Gross Ton Delivered
50%	$83.50
75%	130.00

	Per Gross Ton Furnace		Per Gross Ton Furnace
10%	$35.00	12%	$39.00
11%	37.00	14 to 16%	45.00

Bessemer Ferrosilicon

F.o.b. Jackson County, Ohio, Furnace

	Per Gross Ton		Per Gross Ton
10%	$30.00	12%	$34.00
11%	32.00		

Silvery Iron

F.o.b. Jackson County, Ohio, Furnace

	Per Gross Ton		Per Gross Ton
6%	$23.00	10%	$27.00 to $28.00
7%	24.00	11%	29.00 to 30.00
8%	25.00	12%	31.00 to 32.00
9%	26.00		

Other Ferroalloys

Ferrotungsten, per lb. contained metal del'd	$1.40 to $1.50
Ferrochromium, 4 to 6% carbon and up, 65 to 70% Cr., per lb. contained Cr. delivered, in carloads	11.00c.
Ferrovanadium, per lb. contained vanadium, f.o.b. furnace	$3.15 to $3.65
Ferrocarbontitanium, 15 to 18%, per net ton, f.o.b. furnace, in carloads	$160.00
Ferrophosphorus, electric or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per gross ton	$91.00
Ferrophosphorus, electric 24%, f.o.b. Anniston, Ala., per gross ton	$122.50

Fluxes and Refractories

Fluorspar

	Per Net Ton
Domestic, 85% and over calcium fluoride, not over 5% silicon, gravel, f.o.b. Illinois and Kentucky mines	$18.00
No. 2 lump, Illinois and Kentucky mines	20.00
Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid	$18.25 to $18.75
Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2½% silica, f.o.b. Illinois and Kentucky mines	32.50

Fire Clay Brick

	Per 1000 f.o.b. Works	
	High-Heat Duty Brick	Intermediate Heavy Duty Brick
Pennsylvania	$43.00 to $46.00	$35.00 to $38.00
Maryland	43.00 to 46.00	35.00 to 38.00
New Jersey	50.00 to 65.00	.....
Ohio	43.00 to 46.00	35.00 to 38.00
Kentucky	43.00 to 46.00	35.00 to 38.00
Missouri	43.00 to 46.00	35.00 to 38.00
Illinois	43.00 to 46.00	35.00 to 38.00
Ground fire clay, per ton	7.00	

Silica Brick

	Per 1000 f.o.b. Works
Pennsylvania	$43.00
Chicago	52.00
Birmingham	50.00
Silica clay, per ton	$8.50 to 10.00

Magnesite Brick

	Per Net Ton
Standard sizes, f.o.b. Baltimore and Chester, Pa.	$65.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.	40.00
Standard size	45.00

Chrome Brick

	Per Net Ton
Standard size	$45.00

Mill Prices of Bolts, Nuts, Rivets and Set Screws

Bolts and Nuts

Per 100 Pieces

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

	Per Cent Off List
†Machine bolts	70
†Carriage bolts	70
Lag bolts	70
Plow bolts, Nos. 1, 2, 3 and 7 heads	70
Hot-pressed nuts, blank or tapped, square	70
Hot-pressed nuts, blank or tapped, hexagons	70
C.p.c. and t. square or hex. nuts, blank or tapped	70
Washers*	7.00c. to 6.75c. per lb. off list

*F.o.b. Chicago, New York and Pittsburgh.

†Bolts with rolled thread up to and including ⅛ in. x 6 in. take 10 per cent lower list prices.

Bolts and Nuts

	Per Cent Off List
Semi-finished hexagons nuts	70
Semi-finished hexagons castellated nuts, S.A.E.	70
Stove bolts in packages, P'gh	75, 20, 10 and 5
Stove bolts in packages, Chicago	75, 20, 10 and 5
Stove bolts in packages, Cleveland	75, 20, 10 and 5
Stove bolts in bulk, P'gh	75, 20, 10, 5 and 2½
Stove bolts in bulk, Chicago	75, 20, 10, 5 and 2½
Stove bolts in bulk, Cleveland	75, 20, 10, 5 and 2½
Tire bolts	60, 5 and 5

Discounts of 70 per cent off on bolts and nuts applied on carload business. For less than carload orders discounts of 55, 60 per cent apply.

Large Rivets

(½-In. and Larger)

	Base per 100 Lb.
F.o.b. Pittsburgh or Cleveland	$3.10
F.o.b. Chicago	3.20

Small Rivets

(⅝-In. and Smaller)

	Per Cent Off List
F.o.b. Pittsburgh	70 and 10
F.o.b. Cleveland	70 and 10
F.o.b. Chicago	70 and 10

Cap and Set Screws

(Freight allowed up to but not exceeding 50c. per 100 lb. on lots of 200 lb. or more)

	Per Cent Off List
Milled cap screws	80, 10 and 5
Milled standard set screws, case hardened	80 and 5
Milled headless set screws, cut thread	75 and 10
Upset hex. head cap screws, U.S.S. thread	85
Upset hex. cap screws, S.A.E. thread	85
Upset set screws	80, 10 and 5
Milled studs	70

Chicago

Railroads Feature Week's Business—Ingot Capacity at 92 Per Cent—Light Manufacturing Continues Active

CHICAGO, Sept. 10.—The feature of this market is the activity shown by railroads. The St. Paul has ordered 1000 70-ft. gondola cars from two Western builders, who soon will place the 15,000 tons of steel needed. Inquiry for rails, which is out fully three weeks earlier than usual, totals 75,000 tons, and fresh requests are taking shape that may double the amount in the next week or ten days.

Inflow of railroad business has not come early enough to check shrinking backlogs and halt a revision downward in steel mill operations. The leading producer has taken out No. 9 furnace at South Works for relining, and No. 4 stack at Gary has been banked for needed repairs, which will require about two weeks' time. This means a loss of two steel works furnaces in the week, bringing the total count of active stacks to 27 out of 36.

With curtailment of pig iron production makers of steel have been forced to cut ingot capacity, the average in this district now being 92 per cent.

Glancing over the situation as a whole, it is found that light manufacturing of a general character is still very active. Some improvement is noted in demand from automobile and parts makers. Agricultural machinery builders find no encouragement in larger orders, but they are planning heavier production schedules to go into effect this fall. Road machinery manufacturers are cutting output and still further revision downward seems at hand. Temporary suspension of several line pipe contracts has eased the immediate demand for plates, because the maker of this commodity is not desirous of putting steel on the ground.

Prices for most steel mill products are well established at present levels and there seems to be little thought given by buyers to changes for the fourth quarter. Sellers of heavy tonnage products have not announced prices for the final period. Although no formal announcement has been made regarding future prices for wire and wire products, it is known that some contracts for delivery after Oct. 1 have already been signed.

Ferroalloys.—From the viewpoint of shipments, this market is active but sales are small.

Prices delivered Chicago: 80 per cent ferromanganese, $112.56; 50 per cent ferrosilicon, $83.50 to $88.50; spiegeleisen, 19 to 21 per cent, $39.76 to $41.76.

Sheets.—Announcement of fourth quarter prices has started a buying movement. Demand for roofing sheets is heavy. Output in this district ranges from 85 to 90 per cent.

Base prices per lb., deliv'd from mill in Chicago: No. 24 black sheets, 3c. to 3.05c.; No. 24 galv., 3.65c. to 3.75c.; No. 10 blue ann'l'd, 2.35c. Deliv'd prices at other Western points are equal to the freight from Gary, plus the mill prices, which are 5c. per 100 lb. lower than Chicago delivered prices.

Pig Iron.—With the bulk of fourth-quarter needs covered, foundries in this district continue buying at a uniform rate. Prices for Northern iron remain firmly fixed at $20 a ton, f.o.b. local furnace, and there seems no anxiety among buyers that this level will be changed. Delays have set ahead the relighting of the third Iroquois furnace. In the meantime five merchant stacks are producing. This week has seen the closing of several old Southern iron quotations at $13 a ton, Birmingham. There is a general feeling that Southern iron interests' bid for business in this district has spent its force and announcements are to the effect that prices are to be pegged at $13.50 to $14.50 a ton, Birmingham. Two cargoes of Lake Erie iron arrived at Chicago docks late last week.

Prices per gross ton at Chicago:

N'th'n No. 2 fdy., sil. 1.75 to 2.25	$20.00
N'th'n No. 1 fdy., sil. 2.25 to 2.75	20.50
Malleable, not over 2.25 sil	20.00
High phosphorus	20.00
Lake Super. charcoal, sil. 1.50	27.04
So'th'n No. 2 fdy. (all rail)	$18.51 to 19.01
Low phos., sil. 1 to 2, copper free	29.50
Silvery, sil. 8 per cent	29.79
Bess. ferrosilicon, 14-15 per cent	46.29

Prices are delivered consumers' yards except on Northern foundry, high phosphorus and malleable, which are f.o.b. local furnace, not including an average switching charge of 61c. per gross ton.

Rails and Track Supplies.—Buying of heavy-section rails for fall rolling has got under way fully three weeks earlier than usual. The Chesapeake & Ohio will buy 56,000 tons of rails and 14,000 tons of track fastenings. Other needs by Western railroads bring total pending inquiry to not less than 75,000 tons. Inquiry that is expected to come before the trade in a few days totals 100,000 tons. Local sellers estimate that fully 400,000 tons will have been asked for by the end of this month. Last year more than half of the Chesapeake & Ohio order was placed with Western mills. The Colorado rail mills, which have been down since early in August, are expected to resume operations before the end of this month. One Chicago rail mill has about two weeks' work ahead, whereas another producer continues to operate at 75 per cent and will hold to this rate until order books have grown. Orders for light rails are of car lot size. An inquiry is out for a round tonnage of iron tie plates to be delivered in the spring.

Prices f.o.b. mill, per gross ton: Standard section open-hearth and Bess. rails, $43; light rails, rolled from billets, $36. *Per lb.:* Standard railroad spikes, 2.80c.; track bolts with square nuts, 3.80c.; steel tie plates, 2.15c.; angle bars, 2.75c.

Cast Iron Pipe.—This market remains spotty, with little to indicate that improvement is near at hand. For the most part, public utilities have specified in full against spring delivery orders and it will be several months before they make known their 1930 needs. Railroads are taking a larger aggregate tonnage, but individual orders are of car lot size. Other small users, including industrials, are more active in taking minor tonnages. Northfield, Ill., has ordered 3000 tons of cast iron pipe through a contractor. James B. Clow & Sons have taken 1000 tons of 20 and 24-in. pipe for Columbus, Ohio, and the Lynchburg Foundry Co. has been awarded 2500 tons of 36-in. pipe by Detroit. The McWane Cast Iron Pipe Co. will furnish 15,000 ft. of 4 and 8-in. pipe for Franklin, Ohio, and 15,000 ft. of 6-in. pipe for Newark, Ohio. Chaffee, Mo., is in the market for 22,000 ft. of 4-in.

Prices per net ton, del'd Chicago: Water pipe, 6-in. and over, $45.20 to $46.20; 4-in., $49.20 to $50.20; Class A and gas pipe, $3 extra.

Structural Material.—The local building situation is at low ebb, and competition is unusually severe on going jobs. Although bids have been entered on a number of heavy tonnage projects, these move slowly. Small tonnage projects, which are numerous, are being eagerly sought after by many fabricators, with the result that small shops, to which this class of work usually goes, are having trouble in holding organizations together. Several medium-sized shops have only a few weeks of work on their books. Some of the large shops are eating heavily into backlogs, while others with substantial books are having difficulty in meeting delivery promises. The Phillips High School, Chicago, which will take 3700 tons, will be delayed because bids have been thrown out and new figures must be taken. Deliveries are still further improved, with two to three weeks being promised on heavy shapes and three to four weeks on light sections. Structural shapes, shipped by boat to Chicago, can be had in two to three weeks. This is the first time in many months that a Chicago producer can match delivery dates with water shipments of steel. Sellers have not announced fourth quarter prices, but it is generally believed in the trade that quotations will be unchanged from those of this quarter.

Mill prices on plain material, per lb.: 2.05c. base, Chicago.

Reinforcing Bars.—Marked increase in general activity in this market is shown as the vacation season comes to a close. New contracts total over 1000 tons and fresh inquiry exceeds this figure. It is interesting to note, however, in contrast with a year ago, that the bulk of current business is for schools, industrial buildings and institutions, whereas last year apartment buildings were most prominent. Highway departments in Illinois and neighboring States are busy with new plans, and the trade is looking in that direction for a substantial volume of business. Efforts to clarify the price situation have so far been fruitless. Billet steel reinforcing bars in attrac-

tive tonnages are commonly priced at 2.10c. a lb. and similar business in rail steel bars is at 1.95c. a lb.

Plates.—The stress for deliveries of plates in this district is at least momentarily relieved, following the holding up of several pipe line contracts with resultant lighter tonnages of plates needed by pipe makers. The temporary suspension of this work, together with a general slackening in the market as a whole, has resulted in improvement in delivery dates to the range of three to four weeks in the case of local producers, while steel makers on Lake Erie will promise deliveries by boat at Chicago in two to three weeks. A Southwestern oil refiner has ordered 1000 tons of plates for tank construction, and 3000 tons will be needed for similar work in Texas. Total inquiry for large tank programs is for not less than 16,000 tons of plates. The Chicago & Eastern Illinois denies a report that it has ordered 500 cars from a Western builder. It has, however, before the trade an inquiry for 500 steel gondola car bodies, but at this time there is no assurance that a contract will be placed, as the road may build these bodies in its own shops. An order for 50 refrigerator cars has been taken by the Pullman Car & Mfg. Corporation. Car builders continue to view the outlook with anxiety. Old contracts are running out and, even if shop schedules are curtailed, it may be difficult to hold organizations together until new orders, if placed, can be started on. The argument is being advanced to railroads that the cost of cars will be favorably reflected in quotations if building programs can go forward with only slight interruption.

Bars.—The slackening demand for mild steel bars is resulting in improvement in deliveries. Some sizes can now be had promptly, while the average, taking into consideration all sizes, is now not over four weeks. New sales are in small volume in the absence of announcements of fourth quarter prices. Specifications lag behind shipments. Demand from the agricultural machinery manufacturers continues to taper, though there are indications that production will swing upward in the early weeks of October. One tractor plant has little domestic business on hand, operations being sustained by sizable orders from Russia. Road machinery builders are experiencing the first period of slackening operations in many months. Automobile parts manufacturers are taking larger quantities of steel, and this is viewed by the trade as an omen that the industry as a whole will soon reach higher levels of output. Use of alloy steel bars by the automobile trade is fully one-third above the low point of mid-August. Production schedules are being revised upward, and deliveries on many sizes are no longer prompt. Books have been opened for fourth quarter at unchanged prices. New buying is in fair volume and inquiry is brisk. Fourth quarter prices for iron bars are being named at 2.05c. a lb., Chicago. Several railroads have inquired for their fourth quarter needs. Little interest is being shown by buyers in fourth quarter tonnages of rail steel bars, prices of which are unchanged at 1.95c. a lb., Chicago Heights mill.

Wire Products.—Producers have opened fourth quarter books at current quotations. Inquiry from the manufacturing trade is brisk and several contracts for the final three months have been closed. The jobbing trade, on the other hand, is reluctant to make forward commitments and continues to take needs on a hand-to-mouth basis. Demand for woven wire fencing is forging ahead slowly, with the railroads taking normal quantities for this time of the year. There is no snap to the country trade, and the outlook for improvement is less favorable now than it was a week ago. The cause of this situation is drought, which is affecting many parts of the country. Nail demand is light and prices are still unsettled. It is not uncommon here to find common wire nails quoted at $2.50, base, a keg.

Bolts, Nuts and Rivets.—Last quarter contracting is progressing steadily and prices remain steady. Demand is lighter than at midsummer, due in large measure to smaller output by makers of agricultural machinery.

Coke.—Shipments of by-product foundry coke are moving forward at local oven capacity. Prices are well fixed at $8 a net ton, local furnace.

Old Material.—The Chicago scrap market is marking time. A small tonnage of heavy melting steel has been taken by a user at $16 a gross ton, delivered, and several carloads of cast iron borings have commanded a price of $11.25 a ton, delivered. On the whole, large users are holding out of the market against pressure by sellers. One steel mill has made a sharp cut in shipments of heavy melting steel. Prices for hydraulic bundles are soft. Mills are closely differentiating between dealers' bundles and those prepared by factories. The former will not bring over $13.50 a ton in the present market. A large user of mallable scrap is expected to come into the market this week, and brokers are talking of an advance of 50c. a ton. Users of low phosphorus and electric furnace grades are insistent takers of scrap.

Warehouse Prices, f.o.b. Chicago

	Base per Lb.
Plates and structural shapes	3.10c.
Soft steel bars	3.00c.
Reinforc'g bars, billet steel	2.10c. to 2.35c.
Reinforc'g bars, rail steel	1.85c. to 1.95c.
Cold-fin. steel bars and shafting—	
Rounds and hexagons	3.60c.
Flats and squares	4.10c.
Bands (⅞ in. in Nos. 10 and 12 gages)	3.20c.
Hoops (No. 14 gage and lighter)	3.75c.
Black sheets (No. 24)	4.05c.
Galv. sheets (No. 24)	4.90c.
Blue ann'l'd sheets (No. 10)	3.35c.
Spikes, ⅞ in. and larger	3.55c.
Track bolts	4.55c.
Rivets, structural	4.00c.
Rivets, boiler	4.00c.
	Per Cent Off List
Machine bolts	60
Carriage bolts	60
Coach or lag screws	60
Hot-pressed nuts, sq., tap. or blank	60
Hot-pressed nuts, hex., tap. or blank	60
No. 8 black ann'l'd wire, per 100 lb.	$3.45
Com. wire nails, base per keg	3.20
Cement c't'd nails, base per keg	3.20

Prices deliv'd Chicago district consumers:

	Per Gross Ton	
Basic Open-Hearth Grades:		
Heavy melting steel	$15.25 to	$15.75
Shoveling steel	15.25 to	15.75
Frogs, switches and guards, cut apart, and misc. rails	16.75 to	17.25
Hydraul. compressed sheets	13.75 to	14.25
Drop forge flashings	10.75 to	11.25
No. 1 busheling	13.25 to	13.75
Forg'd cast and r'l'd steel carwheels	18.75 to	19.25
Railroad tires, charg. box size	18.75 to	19.25
Railroad leaf springs cut apart	18.75 to	19.25
Acid Open-Hearth Grades:		
Steel couplers and knuckles	17.00 to	17.50
Coil springs	19.00 to	19.50
Electric Furnace Grades:		
Axle turnings	14.50 to	15.00
Low phos. punchings	17.00 to	17.50
Low phos. plates, 12 in. and under	17.00 to	17.50
Blast Furnace Grades:		
Axle turnings	13.00 to	13.50
Cast iron borings	10.50 to	11.00
Short shoveling turnings	10.50 to	11.00
Machine shop turnings	7.50 to	8.00
Rolling Mill Grades:		
Iron rails	16.00 to	16.50
Rerolling rails	18.00 to	18.50
Cupola Grades:		
Steel rails less than 3 ft.	17.50 to	18.50
Steel rails less than 2 ft.	20.00 to	20.50
Angle bars, steel	17.00 to	17.50
Cast iron carwheels	14.00 to	14.50
Malleable Grades:		
Railroad	17.00 to	17.50
Agricultural	15.50 to	16.00
Miscellaneous:		
*Relaying rails, 56 to 60 lb.	23.00 to	25.00
*Relaying rails, 65 lb. and heav.	26.00 to	31.00
	Per Net Ton	
Rolling Mill Grades:		
Iron angle and splice bars	15.00 to	15.50
Iron arch bars and transoms	21.50 to	22.00
Iron car axles	26.50 to	27.00
Steel car axles	17.50 to	18.00
No. 1 railroad wrought	14.00 to	14.50
No. 2 railroad wrought	13.75 to	14.25
No. 1 busheling	9.00 to	9.50
No. 2 busheling	7.00 to	7.50
Locomotive tires, smooth	14.50 to	15.00
Pipes and flues	10.00 to	10.50
Cupola Grades:		
No. 1 machinery cast	14.50 to	15.00
No. 1 railroad cast	14.00 to	14.50
No. 1 agricultural cast	13.25 to	13.75
Stove plates	12.25 to	12.75
Grate bars	11.75 to	12.25
Brake shoes	11.50 to	12.00

*Relaying rails, including angle bars to match, are quoted f.o.b. dealers' yards.

Lower Rail-Water Rates from East Suspended

WASHINGTON, Sept. 10.—The Interstate Commerce Commission has suspended until Sept. 5 tariffs proposing reductions of 7.5c. a 100 lb. on iron and steel products in carloads over rail-ocean-rail routes from Atlantic seaboard territory to destinations in Texas. A hearing will be held on Sept. 30 at the Sherman Hotel, Chicago, before Examiner Ketler. Illustrative of the schedule are proposed rates of 73.5c. and 75c. a 100 lb. to Dallas from Reading, Pa., Bethlehem, Pa., respectively, the present rates being 81c. and 82.5c.

New York

Pig Iron Situation Highly Competitive—September Steel Demand Shows No Upward Tendency

NEW YORK, Sept. 10.—With Southern pig iron still setting the pace, the price situation in this district remains highly competitive. Alabama foundry iron continues to be quoted at $12.50, base Birmingham, which means delivered prices on water shipments of $19.50 a ton or less at nearby New Jersey points. Eastern Pennsylvania producers have gone as low as $18.50, furnace, to meet this competition. Other Northern furnaces have been able to quote favorable delivered quotations on barge shipments, although they have failed to meet competitive prices in a number of recent transactions. The barge rate from Buffalo is about $2 a ton and the transfer charge to railroad cars at New Jersey ports is 15c. a ton. Buffalo producers are not so aggressive as some time ago, and in many cases will not quote below $17.50 a ton, furnace, for all-rail delivery. Sales in this district during the week were of fair proportions, totaling 12,000 tons. The Bridgeport, Conn., consumer which was in the market for 10,000 tons of basic has bought several thousand tons of Northern iron and to date has not ordered any Alabama material. The low manganese and high phosphorus content of Southern iron is objectionable to many melters in this district, with the result that they are frequently willing to pay a premium of 50c. a ton or more to obtain Northern metal. Pending inquiries total 4000 tons, of which the largest is 2000 tons of foundry for fourth quarter shipment. Most buyers have bought conservatively for the last quarter, but will undoubtedly make supplementary purchases if business remains as active as at present.

Prices per gross ton, delivered New York district:

Buffalo No. 2 fdy., sil. 1.75 to 2.25	$22.41 to $22.91
*Buf. No. 2, del'd east. N. J.	20.78 to 21.28
East. Pa. No. 2 fdy., sil. 1.75 to 2.25	19.89 to 21.02
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	20.39 to 21.52

Freight rates: $4.91 from Buffalo, $1.39 to $2.52 from eastern Pennsylvania.

*Prices delivered to New Jersey cities having rate of $3.28 a ton from Buffalo.

Cast Iron Pipe.—Some makers believe that recent dry weather may result in buying of pipe by certain municipalities which have been obtaining part of their water from private companies. Buying in the past week has been confined to small orders from private users. Prices are substantially unchanged. About 2000 tons of water pipe included in contractors' bids to the Department of Water Supply, Gas and Electricity, New York, has been awarded by the contractor to the United States Pipe & Foundry Co. About 200 tons of 6-in., Class C, water pipe will be required in a contract at Tarrytown, N. Y. The American Construction & Securities Co., New York, is inquiring for 800 tons of 12-in. and smaller pipe for export to Havana, Cuba.

Prices per net ton deliv'd New York: Water pipe, 6-in. and larger, $33.60 to $34.60; 4-in. and 5-in., $36.60 to $37.60; 3-in., $43.60 to $44.60. Class A and gas pipe, $3 extra.

Warehouse Business.—Buying from stock has improved. Black sheets are still being shaded about $1 a ton, and concessions on galvanized sheets range from $1 to $3 a ton. Blue annealed sheets, which are being sold by jobbers in this district on the former base of No. 10 gage for all sizes, are shaded from $3 to $5 a ton.

Reinforcing Bars.—The Truscon Steel Co. will furnish 1500 tons of bars for a warehouse of the Pennsylvania Railroad in Jersey City. Bids are now being taken on 300 tons of bars for section 9, route 101, of the New York subway. The State of New Jersey is expected to award 300 tons shortly for bridge work. The volume of small orders ranging from 25 to 75 tons has been fairly good. Prices are unchanged.

Billet steel reinforcing bars in 40, 50 and 60-ft. lengths, 2.05c. per lb., Pittsburgh, and 2.30c. per lb., Pittsburgh warehouse, for cut lengths. Out of New York warehouse, 2.90c. per lb. for lots of 5 tons or more, 3.05c. for lots of 2 to 5 tons and 3.30c. for less than 2 tons, all delivered at job.

Finished Steel.—Local sales offices of steel companies are unable to detect an upward trend in the volume of orders and specifications since Sept. 1. Available figures, however, indicate that there has been no further decline, present orders holding at about the rate of the latter half of August. Here and there some sign of improvement has been noticed, but it has not been of sufficient importance to mark any general tendency. Insofar as the outlook for the remainder of the year may be gaged, the willingness of steel consumers to make fourth quarter contracts is perhaps the most significant development of the past week. No large amount of contracting has been done, but a considerable number of buyers of steel bars and sheets have signed up for the last three months. No change of prices is indicated on any product, with the possible exception of galvanized sheets and cold-rolled strip steel, on which some producers are trying to get $2 a ton above recent minimum quotations. The only new sign of price weakness is in structural shapes, which some Eastern fabricators have been able to buy at delivered prices which figure back to 1.80c., Pittsburgh. This has also meant a concession from Eastern base prices. There is a lull, believed by fabricators to be temporary, in building construction awards, although a vast amount of New York work is in prospect. The outstanding award of the week was 24,000 tons for the new Waldorf-Astoria Hotel, to be erected on Park Avenue, New York. For subway work, an inquiry has been issued for 9300 tons. Railroad equipment buying lags. A pipe line project, involving 191,000 tons of welded pipe, which was tentatively awarded in July to the Milwaukee fabricator has been held up pending the completion of contracts for other equipment required for the project. This line is to be built by the Central States

Warehouse Prices, f.o.b. New York

	Base per Lb.
Plates and structural shapes	3.30c.
Soft steel bars, small shapes	3.25c.
Iron bars	3.24c.
Iron bars, Swed. charcoal	7.00c. to 7.25c.
Cold-fin. shafting and screw stock—	
Rounds and hexagons	3.60c.
Flats and squares	4.10c.
Cold-roll. strip, soft and quarter hard	5.15c. to 5.40c.
Hoops	4.25c.
Bands	3.75c.
Blue ann'l'd sheets (No. 10)	3.80c. to 3.90c.
Long terne sheets (No. 24)	5.80c.
Standard tool steel	12.00c.
Wire, black annealed	4.50c.
Wire, galv. annealed	5.15c.
Tire steel, 1½ x ¼ in. and larger	3.30c.
Smooth finish, 1 to 2½ x ¼ in. and larger	3.65c.
Open-hearth spring steel, bases	4.50c. to 7.00c.

	Per Cent Off List
Machine bolts, cut thread:	
¾ x 6 in. and smaller	60
1 x 30 in. and smaller	50 to 50 and 10
Carriage bolts, cut thread:	
½ x 6 in. and smaller	60
¾ x 20 in. and smaller	50 to 50 and 10
Coach screws:	
½ x 6 in. and smaller	60
1 x 6 in. and smaller	50 to 50 and 10

	Per 100 Ft.
Boiler Tubes—	
Lap welded, 2-in.	$17.33
Seamless steel, 2-in.	20.24
Charcoal iron, 2-in.	25.00
Charcoal iron, 4-in.	67.00

Discounts on Welded Pipe

Standard Steel—	Black	Galv.
⅛-in. butt	46	29
¼-in. butt	51	37
1-3-in. butt	53	39
2½-6-in. lap	48	35
7 and 8-in. lap	44	17
11 and 12-in. lap	37	12
Wrought Iron—		
⅛-in. butt	5	+19
¼-in. butt	11	+ 9
1-1½-in. butt	14	+ 6
2-in. lap	5	+14
2-6-in. lap	11	+ 6
7-12-in. lap	3	+16

Tin Plate (14 x 20 in.)

	Prime	Seconds
Coke, 100 lb. base box	$6.45	$6.20
Charcoal, per Box—	A	AAA
IC	$9.70	$12.10
IX	12.00	14.25
IXX	13.90	16.00

Terne Plate (14 x 20 in.)

IC—20-lb. coating	$10.00 to $11.00
IC—30-lb. coating	12.00 to 13.00
IC—40-lb. coating	13.75 to 14.25

Sheets, Box Annealed—Black, C. R. One Pass

	Per Lb.
Nos. 18 to 20	3.75c. to 3.80c.
No. 22	3.90c. to 3.95c.
No. 24	3.95c. to 4.00c.
No. 26	4.05c. to 4.10c.
No. 28*	4.20c. to 4.25c.
No. 30	4.45c. to 4.50c.

Sheets, Galvanized

	Per Lb.
No. 14	4.20c. to 4.40c.
No. 16	4.15c. to 4.25c.
No. 18	4.20c. to 4.40c.
No. 20	4.30c. to 4.50c.
No. 22	4.40c. to 4.60c.
No. 24	4.65c. to 4.75c.
No. 26	4.90c. to 5.00c.
No. 28*	5.15c. to 5.25c.
No. 30	5.55c. to 5.65c.

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

Natural Gas Co., in which a number of prominent oil companies are interested. The A. O. Smith Corporation, Milwaukee, has booked 106 miles of 16-in. electrically welded pipe for utilities operating in Nebraska and Oklahoma. Structural steel lettings in the New York metropolitan district during August amounted to 74,566 tons, not including subway work, bridge construction, etc. This compares with 57,659 tons in July and 43,305 tons in August, 1928.

Mill prices per lb., deliv'd New York: Soft steel bars, 2.29c.; plates, 2.22½c.; structural shapes, 2.19½c.; bar iron, 2.14c.

Coke.—Operations are being curtailed in the Connellsville district, but standard furnace coke is unchanged at $2.75 to $2.80 a net ton, ovens. Special brands of beehive foundry coke are quoted at $4.85 a net ton, ovens, or $8.56, delivered to northern New Jersey, Jersey City and Newark, and $9.44 to New York and Brooklyn. By-product coke is quoted at $9 to $9.40 a net ton, Newark or Jersey City, and $10.06, New York or Brooklyn.

Old Material.—Brokers with eastern Pennsylvania contracts on No. 1 heavy melting steel are offering $16 a ton, delivered, but mills are fairly well supplied and shipments permitted are small. A consumer at Harrisburg, Pa., has bought heavy breakable cast at $14.50 a ton, delivered, and brokers are offering $14 a ton on this order. Short shoveling turnings are being bought at $12 a ton, delivered eastern Pennsylvania.

Dealers' buying prices per gross ton, f.o.b. New York:

No. 1 heavy melting steel	$12.50 to	$13.25
Heavy melting steel (yard)	8.00 to	10.00
No. 1 hvy. breakable cast	10.25 to	11.50
Stove plate (steel works)	8.00 to	8.25
Locomotive grate bars	8.25 to	8.75
Machine shop turnings	7.75 to	8.00
Short shoveling turnings	8.00 to	8.50
Cast borings (blast furn. or steel works)	7.00 to	7.75
Mixed borings and turnings	6.75 to	7.75
Steel car axles	19.50 to	20.00
Iron car axles	24.00 to	25.00
Iron and steel pipe (1 in. dia., not under 2 ft. long)		10.75
Forge fire	9.75 to	10.25
No. 1 railroad wrought	12.00 to	12.50
No. 1 yard wrought, long	11.00 to	11.50
Rails for rolling	13.25 to	13.75
Cast iron carwheels	12.50 to	13.00
Stove plate (foundry)	8.00 to	8.50
Malleable cast (railroad)	14.00 to	14.50
Cast borings (chemical)	10.00 to	10.50

Prices per gross ton, deliv'd local foundries:

No. 1 machry. cast	$17.00
No. 1 hvy. cast (columns, bldg. materials, etc.), cupola size	15.00
No. 2 cast (radiators, cast boilers, etc.)	14.50

Production of chrome ore in the Nuevitas district of Cuba rose in 1928 to 28,650 gross tons, compared with 16,027 tons in 1927. All of this output is in the hands of American firms and is exported to the United States. The production of chrome ore has been steadily increasing for the past several years.

Atlantic Steel & Pipe Corporation, Stewart Avenue and Meadow Street, Brooklyn, has been formed by a consolidation of the Watkins Structural Steel Co. and Schreer & Poster, Inc.

Cleveland

Present Prices Reestablished on Nearly All Products for Fourth Quarter—Orders Gain Slightly

CLEVELAND, Sept. 10.—With additional price announcements during the week, third quarter quotations have been reestablished by most producers for the fourth quarter on about all products. Several outside mills have reaffirmed the 1.95c., Pittsburgh and Cleveland, price on steel bars and 1.95c., Pittsburgh, on plates and structural shapes. Present prices have been reestablished on cold-finished steel bars and bolts, nuts and rivets. Galvanized sheets are being quoted for the last quarter at 3.60c., Pittsburgh, the more common prevailing price, and tin mill black plate at 3c., Pittsburgh. While a few steel bar contracts have been placed for the coming quarter, consumers are not yet showing much interest in making commitments for that delivery, and mills are making little effort to close contracts.

Specifications for steel bars, plates and structural material were fair during the past week, business in these lines so far this month showing a gain over the corresponding period of August. Sheets and hot and cold-rolled strip steel are quiet.

While the demand for steel from the automotive industry continues rather light, it shows a slight gain and is expected to increase moderately during the next few weeks. With only two or three exceptions, motor car companies have not yet got under production on their new models. The Fisher Body Corporation is expected to place in a few days a round tonnage of automobile body sheets for the last quarter for Chevrolet cars. Most recent purchases by the automotive industry have been limited to October requirements.

Mills in this territory continue to operate at close to capacity.

Steel Bars, Plates and Shapes.—Orders for steel bars show a little improvement over those of August, but deliveries have continued to gain and most mills can make shipments in two weeks. Some mills are still promising three to four weeks' delivery on structural material and four to six weeks on plates. While 1.95c., Cleveland, is the regular quotation on steel bars, 1.90c. is being named in some cases by a local mill. Plates and shapes are firm at 1.95c., Pittsburgh. Structural inquiry is light, but a good volume of business is in prospect, including considerable bridge work for railroad grade eliminations. Detroit has an inquiry out for 2200 tons of sheet steel piling for its water works intake.

Pig Iron.—Producers continue to enter a fair volume of business in foundry and malleable iron for the last quarter. Sales by Cleveland interests during the week were 18,500 tons, this business having been well distributed in various territories. New releases indicate that the automotive industry will take a little more iron this month than last, although most consumers in that field are taking iron on the same shipping schedules as last month. The agricultural implement industry is taking iron in good volume. One manufacturer in this field has purchased 2000 to 3000 tons for its Springfield, Ohio, and Richmond, Ind., plants. Some of the stove and warm air furnace manufacturers are very busy and are taking iron in good quantities, while others are doing only fairly well. The Southern foundry iron market has a firmer tone, and $13.50, Birmingham, appears to be the lowest price quoted in this territory. There is little interest in the price situation respecting Northern iron, as the market is firm at quotations that have prevailed for some time. Cleveland furnaces quote foundry and malleable iron at $18.50, furnace, for outside shipment and at $19 for local delivery. For Michigan delivery both grades are selling at $20.

Prices per gross ton at Cleveland:

N'th'n fdy., sil. 1.75 to 2.25		$19.50
S'th'n fdy., 1.75 to 2.25	$19.50 to	20.00
Malleable		19.50
Ohio silvery, 8 per cent		28.00
Basic Valley furnace		18.50
Stand. low phos., Valley	26.50 to	27.00

Prices except on basic and low phosphorus are delivered Cleveland. Freight rates: 50c. from local furnaces; $3 from Jackson, Ohio; $6 from Birmingham.

Semi-Finished Steel.—While the leading local producer has not yet named prices for the fourth quarter, it is expected that the present $35, Cleveland, Youngstown and Pittsburgh, price will be reaffirmed for that delivery. Specifications fell off the past week, and a local mill, while still operating at 100 per cent capacity, has reduced its commitments to seven days' operations.

Bolts, Nuts and Rivets.—The present discount of 70 per cent has been reaffirmed for the fourth quarter on bolts and nuts. Stove bolts are also unchanged for that delivery. While

Warehouse Prices, f.o.b. Cleveland

	Base per Lb.
Plates and struc. shapes	3.00c.
Soft steel bars	3.00c.
Reinforc. steel bars	2.25c. to 2.50c.
Cold-fin. rounds and hex	3.65c.
Cold-fin. flats and sq.	4.15c.
Hoops and bands, No. 12 to ¼ in., inclusive	3.25c.
Hoops and bands, No. 13 and lighter	3.65c.
Cold-finished strip	*5.95c.
Black sheets (No. 24)	3.70c. to 3.90c.
Galvanized sheets (No. 24)	4.60c. to 4.75c.
Blue ann'l'd sheets (No. 10)	3.25c.
No. 9 ann'l'd wire, per 100 lb.	$2.90
No. 9 gal. wire, per 100 lb.	3.35
Com. wire nails, base per keg	2.90

*Net base, including boxing and cutting to length.

makers are feeling the effect of the slump in the automotive industry, the demand shows a slight gain over that of the latter part of August. Rivet manufacturers expect to reestablish the present price of $3.10 a 100 lb. for large rivets and 70 and 10 per cent off list for small rivets for the fourth quarter. Formal announcement to that effect probably will be made late in the week.

Iron Ore.—While shipments will not be so heavy this month as during the record-breaking month of August, there will not be a marked slowing down, and the movement is expected to be about 10,000,000 tons. The balance of ore on docks Sept. 1 was 5,110,516 tons, compared with 5,718,482 tons on the same date last year. Receipts at Lake Erie ports up to Sept. 1 were 29,956,346 tons, compared with 21,514,980 tons during the corresponding period last year. Shipments from these docks were 22,395,864 tons, against 15,595,692 tons up to Sept. 1 last year.

Sheets.—Specifications have been very light the past week. Mills need business in automobile body sheets, but most producers are well filled with tonnage for four to six weeks on other grades. Continuous mills can make quite prompt deliveries. Curtailment in production has been slight. Nearly all producers have announced the reestablishment of the present prices of 2.85c., Pittsburgh, for black, 2.35c. for blue annealed and 3.60c. for galvanized for the last quarter. However, one Ohio mill has named 2.95c. for black sheets, which was the price announced for the present quarter, but this did not hold. A leading producer has announced that it will discontinue the $2 a ton differential on galvanized sheets to jobbers. Prices for current orders are being well maintained, although an occasional concession to 3.55c. is being made to consumers on galvanized sheets. There has not been much fourth quarter contracting as yet, although some of the mills have taken fair-sized lots of automobile body sheets for that delivery.

Cold-Finished Steel Bars.—The present price of 2.30c., Pittsburgh, and 2.35c., Cleveland, has been reestablished for the fourth quarter and mills will start shortly to close contracts. Specifications continue light as a result of the slowing down of the automotive industry.

Strip Steel.—Specifications for hot and cold-rolled strip are light, and most of the mills need orders. Some automotive business is in prospect, which will place some of the mills in a better position. Consumers are taking no interest in fourth quarter contracts, although several mills have opened their books for that delivery at the present prices of 1.90c., Pittsburgh, for wide strip and 2c. for narrow and at 2.85c., Cleveland and Pittsburgh, for cold-rolled strip. While no test has been made of the proposed advance in cold strip prices, there are indications that the larger consumers will be given the 2.75c. price that has prevailed in this quarter.

Coke.—Producers have advanced by-product coke for domestic use 25c. a ton to $4.25, Ohio ovens, for nut size and to $4.75 for egg. Dealers are stocking up, and this is causing a brisk demand. Some activity has developed in heating coke, which is quoted at $2.75 to $3, but there is talk of an advance. Ohio by-product foundry coke continues to move fairly well and is quoted at $8.25, ovens. Connellsville foundry coke is unchanged.

Old Material.—The supply of scrap is more plentiful than it has been for some time and the market has a weak tone. Dealers are able to buy car lots of selected No. 1 heavy melting steel for a Cleveland mill at $16.50, or 50c. a ton less than recently. For lighter material for another mill they are still paying $15.50. Prices also show a softening tendency in the Valley district, where $17.50 to $18 is being paid by dealers for selected heavy melting steel scrap. While $10.75 has not disappeared for blast furnace scrap, $10.50 has become more common. Mills are taking scrap in about the same volume as recently but are not buying additional supplies.

Prices per gross ton delivered consumers' yards:

Basic Open-Hearth Grades:	
No. 1 heavy melting steel	$15.25 to $15.50
No. 2 heavy melting steel	14.75 to 15.00
Compressed sheet steel	15.50 to 16.00
Light bundled sheet stampings	12.00 to 12.50
Drop forge flashings	13.00 to 13.25
Machine shop turnings	9.75 to 10.25
Short shoveling turnings	11.75 to 12.25
No. 1 railroad wrought	13.50 to 14.00
No. 2 railroad wrought	16.00 to 16.50
No. 1 busheling	13.25 to 13.75
Pipes and flues	9.00 to 9.50
Steel axle turnings	12.50 to 13.00
Acid Open-Hearth Grades:	
Low phos., forging crops	17.75 to 18.00
Low phos., billet, bloom and slab crops	18.50 to 18.75
Low phos., sheet bar crops	18.00 to 18.50
Low phos., plate scrap	18.00 to 18.50
Blast Furnace Grades:	
Cast iron borings	10.50 to 10.75
Mixed borings and short turnings	10.50 to 10.75
No. 2 busheling	10.50 to 10.75
Cupola Grades:	
No. 1 cast	17.50 to 18.00
Railroad grate bars	11.00 to 12.00
Stove plate	12.00 to 12.50
Rails under 3 ft	18.50 to 19.00
Miscellaneous:	
Railroad malleable	18.00 to 18.50
Rails for rolling	16.25 to 16.50

Philadelphia

Steel Mill Operations Lower—Shipments In Excess Of New Orders—Pig Iron Quiet

PHILADELPHIA, Sept. 10.—With most mills shipping steel in excess of new orders, operating rates have shown further recession, but in most cases mills are at 80 per cent or more of capacity. Plate producers are particularly well engaged, but new business is generally in small tonnages. Bar and sheet buying is limited and sellers are awaiting renewed activity in the automotive field and increased railroad buying as factors in maintaining operating rates.

The Reading Railroad has closed for 30,000 tons of 100 and 130-lb. sections, of which 24,000 tons went to the Bethlehem Steel Co. and 6000 tons to the Carnegie Steel Co. The Chesapeake & Ohio Railroad is inquiring for about 54,000 tons of 100 and 130-lb. sections for delivery next year.

Pig Iron.—Foundry iron buying is confined to small lots for early shipment. Sellers are inclined to believe that many consumers will limit their buying to immediate needs for the rest of this year. Southern foundry iron is still being offered to consumers in this district, but sellers are showing slightly more firmness and are not offering the former concessions of $1 and more a ton from $14, base Birmingham. Eastern Pennsylvania furnaces have also adopted a firmer position and buyers are said to have been unable to obtain less than $21, base, although producers have quoted $19 a ton, base, and lower in outside competitive districts. Basic iron is quiet following the purchase of about 500 tons of special analysis for prompt shipment to an eastern Pennsylvania mill at about $20, base furnace. Two large users in this district are expected to inquire for their last quarter basic requirements in the next fortnight.

Bars.—Mills are maintaining a high rate of operation, but in most cases are shipping in excess of new business. Smaller production is expected unless increased buying by the railroads and automobile manufacturers develops early this fall. The price is unchanged at 1.95c., Pittsburgh, or 2.27c. a lb., delivered Philadelphia.

Prices per gross ton at Philadelphia:

East. Pa. No. 2, 1.75 to 2.25 sil.	$21.26 to $21.76
East. Pa. No. 2X, 2.25 to 2.75 sil.	21.76 to 22.26
East. Pa. No. 1X	22.26 to 22.76
Basic (del'd east. Pa.)	19.75 to 20.25
Gray forge	20.00 to 20.50
Malleable	21.25 to 21.75
Stand. low phos. (f.o.b. N. Y. State furnace)	22.00 to 23.00
Cop. br'g low phos. (f.o.b. furnace)	23.50 to 24.00
Va. No. 2 plain, 1.75 to 2.25 sil.	24.04
Va. No. 2X, 2.25 to 2.75 sil.	24.54

Prices, except as specified otherwise, are deliv'd Philadelphia. Freight rates: 76c. to $1.64 from eastern Pennsylvania furnaces; $4.54 from Virginia furnaces.

Reinforcing Bars.—Some sizable projects requiring reinforcing bars are pending award, including a Philadelphia warehouse for the Alamar Stores, 800 tons of bars, and a film exchange building for the Stanley Co., 300 tons of bars. Construction of a factory building for the Atwater Kent Mfg. Co., Philadelphia, has been postponed. Competition between billet

steel and rail steel bar sellers continues keen, and distributers are still accepting billet steel bar business at concessions down to 1.95c. a lb., Pittsburgh, or 2.27c., delivered Philadelphia, with no extra for cutting to length. Rail steel bar sellers are quoting 1.95c., Tonawanda, N. Y., or Franklin, Pa., or 2.27c., delivered Philadelphia, with no extra for cutting to length, but when contracts are secured they are usually at a concession. Rail steel bar mills have suggested that unless billet steel bar prices are maintained at a higher level, it will be necessary to reduce their prices several dollars a ton to establish a sufficient differential.

Shapes.—Demand for small shapes is good and most mills are well engaged on sizes 12-in. and smaller, on which there are slight delays in delivery. Prices continue irregular, especially on the larger specifications, ranging from 1.95c., f.o.b. nearest mill to consumer, or 2.01c., Philadelphia, to 2.05c., f.o.b. mill, or 2.11c., delivered Philadelphia.

Plates.—Tonnages being bought at present are small, but the total volume of orders is sizable and mills are able to maintain a high rate of operation, although bookings are not in excess of shipments. Universal plate mills are being operated better, and deliveries extend to a week or more on universal plates. The price is firm at 2.05c., Coatesville, Pa., or 2.15c., delivered Philadelphia.

Sheets.—With buying by automobile manufacturers still rather limited, most sheet mills are seeking tonnage. Some shading of galvanized sheet prices continues, with quotations from 3.50c. to 3.60c., Pittsburgh, or 3.82c. to 3.92c., delivered Philadelphia. Black sheets are quiet, and the price is fairly stable at 2.85c., Pittsburgh, or 3.17c., delivered Philadelphia. Blue annealed sheets are quoted at 2.35c., Pittsburgh, or 2.67c., delivered Philadelphia, for No. 13 gage and light plates, blue annealed are 2.20c., Pittsburgh, or 2.52c., Philadelphia, for No. 10 gage. Occasionally, when competition from continuous sheets is encountered, some blue annealed sheet sellers have granted concessions of $1 to $2 a ton from these prices.

Imports.—In the week ended Sept. 7, 4048 tons of pig iron arrived at this port, of which 2300 tons was from the United Kingdom and 1748 tons from British India. Ore arrivals consisted of 4791 tons of manganese ore from British West Africa, 2700 tons of chrome ore from Portuguese Africa and 15 tons of tungsten ore from Germany. Steel imports were 28 tons of steel bands, 44 tons of steel bars and 15 tons of structural shapes from Germany, 20 tons of steel bands from France, 9 tons of steel rods from Sweden and 5 tons of steel scrap from the United Kingdom.

Old Material.—Except for the recent purchase by a Coatesville, Pa., mill of upward of 10,000 tons of No. 1 heavy melting steel for shipment by barge and rail from Baltimore, the market is quiet. A consumer at Harrisburg, Pa., has bought heavy breakable cast at $14.50 a ton, delivered, although brokers are in some instances still paying $14.50 a ton to fill old contracts. Machine shop turnings are being shipped to Phoenixville, Pa., and one broker has been paying $12 a ton for short shoveling turnings on this delivery.

Prices per gross ton delivered consumers' yards, Philadelphia district:

No. 1 heavy melting steel	$16.50 to $17.00
Scrap T rails	16.00 to 16.50
No. 2 heavy melting steel	12.50 to 14.50
No. 1 railroad wrought	16.00 to 16.50
Bundled sheets (for steel works)	11.50
Hydraulic compressed, new	14.50 to 15.50
Hydraulic compressed, old	12.00 to 12.50
Machine shop turnings (for steel works)	12.00
Heavy axle turnings (or equiv.)	14.00 to 14.50
Cast borings (for steel works and roll. mill)	11.00 to 11.75
Heavy breakable cast (for steel works)	14.50 to 15.00
Railroad grate bars	12.00 to 12.50
Stove plate (for steel works)	12.00 to 12.50
No. 1 low phos., hvy., 0.04% and under	22.00 to 23.00
Couplers and knuckles	19.50 to 20.50
Rolled steel wheels	19.50 to 20.50
No. 1 blast f'nace scrap	10.50 to 11.00
Wrot. iron and soft steel pipes and tubes (new specific.)	15.00
Shafting	19.00 to 20.00
Steel axles	23.00 to 23.50
No. 1 forge fire	14.00
Cast iron carwheels	16.50 to 17.00
No. 1 cast	16.50 to 17.00
Cast borings (for chem. plant)	14.50
Steel rails for rolling	16.50 to 17.00

Warehouse Prices, f.o.b. Philadelphia

	Base per Lb.
Plates, ¼-in. and heavier	2.70c.
Plates, ⅜-in.	2.90c.
Structural shapes	2.70c.
Soft steel bars, small shapes, iron bars (except bands)	2.80c.
Round-edge iron	3.50c.
Round-edge steel, iron finished 1½ x 1½ in.	3.50c.
Round-edge steel planished	4.30c.
Reinforc. steel bars, sq. twisted and deform.	2.60c. to 2.80c.
Cold-fin. steel, rounds and hex	3.60c.
Cold-fin. steel, sq. and flats	4.10c.
Steel hoops	3.55c.
Steel bands, No. 12 to ⅜-in. inclus.	3.30c.
Spring steel	5.00c.
*Black sheets (No. 24)	4.10c.
†Galvanized sheets (No. 24)	4.85c.
Light plates, blue annealed (No. 10)	3.25c.
Blue ann'l'd sheets (No. 13)	3.40c.
Diam. pat. floor plates—	
¼-in.	5.30c.
⅜-in.	5.50c.
Rails	3.20c.
Swedish iron bars	6.60c.

*For 50 bundles or more: 10 to 49 bun., 4.10c. base; 1 to 9 bun., 4.35c. base.
†For 50 bundles or more: 10 to 49 bun., 4.95c. base; 1 to 9 bun., 5.30c. base.

Reinforcing Steel

Awards Total 6200 Tons and Inquiries 2500 Tons

REINFORCING steel awards the past week totaled 6200 tons, as against 1700 tons the previous week. Twenty-three hundred tons will be required for a wharf at Oakland, Cal., and 1500 tons for a Pennsylvania Railroad warehouse at Jersey City. Inquiries, amounting to 2500 tons, consisted of miscellaneous jobs ranging from 100 to 300 tons each. Awards follow:

BLOOMFIELD, N. J., 100 tons, addition to lamp works of Westinghouse Electric & Mfg. Co., to Truscon Steel Co.

PENNSYLVANIA RAILROAD, 1500 tons, warehouse at Jersey City, to Truscon Steel Co.

CLEVELAND, 500 tons, work for Cleveland Union Terminals Co., to Bourne-Fuller Co.

CINCINNATI, 650 tons, Christ Hospital, to Pollack Steel Co.

CHICAGO, 450 tons, Wilbur Wright Public School, to Calumet Steel Co.

CHICAGO, 385 tons, Lying-in Hospital, to Inland Steel Co.

CHICAGO, 100 tons, Bethany Hospital, to Olney J. Dean & Co.

CHICAGO, 160 tons, factory addition for Eugene Dietzgen Co., to Inland Steel Co.

METALINE FALLS, WASH., 100 tons, hotel, to Pacific Coast Steel Co.

OAKLAND, CAL., 2300 tons, wharf, to Pacific Coast Steel Co.

Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

NEW YORK, 300 tons, section 9, route 101, of subway at Sixth Avenue and Forty-first Sttreet.

STATE OF NEW JERSEY, 300 tons, highway bridges.

CLEVELAND, 140 tons, jail-courts building.

CLEVELAND, 150 tons, Cleveland Union Terminals Co.

CINCINNATI, 200 tons, building for Cincinnati & Suburban Bell Telephone Co.

NORTH CHICAGO, 275 tons, Government Hospital, B-W Construction Co., general contractor.

CHICAGO, 285 tons, DuPont Warehouse.

CHICAGO, tonnage not stated, addition to Michael Reese Hospital.

CHICAGO, 255 tons, apartment building, 1530 North State Street.

CHICAGO, 200 tons, apartment building; Levy & Klein, architects.

CHICAGO, 300 tons, Whittier Public School.

Railroad Equipment

St. Paul Places Orders for 1000 Gondola Cars

THE placing of orders for 1000 70-ft. gondola cars by the Chicago, Milwaukee, St. Paul & Pacific featured the railroad equipment market the past week. The Chicago & Eastern Illinois is taking bids on 500 steel gondola car bodies. The Norfolk & Western may buy 2000 hopper cars and is asking for prices on the rebuilding of 1000 steel hopper cars. Details of the past week's business follow:

Norfolk & Western may buy 2000 hopper cars, instead of 1000 mentioned a week ago, and is also asking for bids for rebuilding 1000 steel hopper cars.

Southern Pacific, Texas lines, is in the market for parts for use in rebuilding 380 box cars.

Wabash will build 100 hopper car bodies for its subsidiary, the Ann Arbor, in its own shops.

Safety Car Heating & Lighting Co. has ordered 50 refrigerator cars from Pullman Car & Mfg. Corporation.

Chicago & Eastern Illinois is in the market for 500 steel gondola car bodies.

Chicago, Milwaukee, St. Paul & Pacific has ordered 500 70-ft. gondola cars from Pressed Steel Car Co. and a like number from Bettendorf Co.

New York, New Haven & Hartford has changed its inquiry for 75 coke car bodies to 75 complete coke cars.

Pacific Coast

Two Pipe Lines Take 4750 Tons of Plates—Bids Opened on 10,000-Ton Project

SAN FRANCISCO, Sept. 7 (*By Air Mail*).—Demand for iron and steel products on the Pacific Coast has shown little sign of improvement during the past few weeks. Two pipe line projects in Vancouver, B. C., involving 4750 tons of plates, were placed and bids were opened on a 10,000-ton pipe line at Everett, Wash., on which the Western Pipe & Steel Co. was low bidder. The Pacific Coast Steel Co. took 2300 tons for a wharf in Oakland and the East Bay Municipal Utility District, Oakland, placed over 1000 tons of cast iron pipe.

Pig Iron.—Pig iron inquiries and sales are confined to small lots. Foundry operations continue on a restricted basis. No change in quotations has occurred.

Prices per gross ton at San Francisco:

*Utah basic	$25.00 to $26.00
*Utah fdy., sil. 2.75 to 3.25	25.00 to 26.00
**Indian fdy., sil. 2.75 to 3.25	25.00 to 26.00

*Delivered San Francisco.
**Duty paid, f.o.b. cars San Francisco.

Bars.—Awards this week exceeded 2400 tons. In addition to the 2300-ton wharf project, mentioned above, the Pacific Coast Steel Co. took 100 tons for a hotel at Metaline Falls, Wash. Pending business is not large. Out-of-stock prices in the San Francisco district continue on a fairly firm basis at 2.30c., base, on carload quantities and at 2.60c. on smaller tonnages. Los Angeles prices are $2 a ton higher. Demand for mild steel bars has shown little improvement and movement continues to be confined to small lots of numerous sizes. Prices on this class of material are firm at 2.35c., c.i.f. coast ports.

Plates. — Vancouver, B. C., has awarded two pipe lines. One project called for 4000 tons and was placed with Harrison & Lamond Construction Co. and the other, amounting to 750 tons, was placed with the Vancouver Engineering Works. James Coyne, Portland, was awarded the general contract for a pipe line at Bremerton, Wash., involving 3000 tons of plates. The subcontract for the fabrication of the pipe has not been let. Other business was confined to lots of less than 100 tons. Prices remain firm at 2.35c., c.i.f.

Shapes.—Structural shape bookings included a boiler shop at Hillyard, Wash., for the Great Northern Railroad Co., calling for 180 tons, and placed with the Hofius Steel & Equipment Co. The St. John's River bridge, Portland, will require 8300 tons instead of 7000 tons, as previously reported. The Wallace Bridge & Structural Steel Co. will fabricate 6000 tons and the United States Steel Products Co. 2000 tons; 300 tons for approaches has been placed with the Gilpin Construction Co. Pending business calls for more than 7000 tons. Plain material is firm at 2.35c., c.i.f. coast ports. Foreign material is quoted around 1.70c., c.i.f., duty paid.

Cast Iron Pipe.—Among cast iron pipe awards of the week was 1343 tons of 4 to 12-in. Classes C and D pipe for Vancouver, B. C., of which 850 tons was placed with Evans, Colman & Evans and 493 tons with Gordon & Belyea. The East Bay Municipal Utility District, Oakland, placed 818 tons of 6 to 12-in. Class 150 pipe with the American Cast Iron Pipe Co., 127 tons of 6-in. Class 150 pipe with the Pacific States Cast Iron Pipe Co., and 109 tons of 8-in. Class 150 pipe with the United States Pipe & Foundry Co. The Spring Valley Water Co., San Francisco, has awarded to an unnamed company 182 tons of 8-in. Class 150 pipe. All bids were rejected on 112 tons of 4 to 8-in. Class B pipe for Estelle Street, San Diego. No action has yet been taken on 377 tons of 6 to 10-in. Class B pipe for Anaheim, Cal., the low bidder being the United States Pipe & Foundry Co. New inquiries include 460 tons of 4 to 8-in. Class B pipe for Chesterton Street, San Diego, and 230 tons of 4 and 6-in. Class C pipe for Cable Street, San Diego, bids on both to be opened Sept. 23.

Warehouse Prices, f.o.b. San Francisco

	Base per Lb.
Plates and struc. shapes	3.15c.
Soft steel bars	3.15c.
Small angles, ⅞-in. and over	3.15c.
Small angles, under ⅞-in.	3.55c.
Small channels and tees, ¾-in. to 2¾-in.	3.75c.
Spring steel, ¼-in. and thicker	5.00c.
Black sheets (No. 24)	4.90c.
Blue ann'l'd sheets (No. 10)	3.80c.
Galv. sheets (No. 24)	5.30c.
Struct. rivets, ½-in. and larger	5.65c.
Com. wire nails, base per keg	$3.40
Cement c't'd nails, 100 lb. keg	3.40

Birmingham

Pig Iron Books Opened for Fourth Quarter—Plates, Shapes and Bars Reduced $2 a Ton

BIRMINGHAM, Sept. 10. — Books were opened last week for fourth quarter pig iron at the base price of $14.50 for No. 2 foundry. Sales to district consumers have been active since the books were opened for the last quarter, although the buying movement cannot be called heavy. Inquiries and private negotiations for tonnages point to heavier covering than has been the case in the preceding quarters this year. Most of the fourth quarter business booked so far has been for shipment to points outside the Southern territory. Prices on outside sales have been reduced from the $14.50 base to meet competition in other territories, but in general they are firmer than two weeks ago. On the larger tonnages, sales at $13.50 have been reported in competitive territories. Shipments remain active, and the margin over output is gradually being increased. There have been no changes in furnace operations during the past two weeks. Of the 14 active furnaces, five are on basic and nine on foundry iron.

Prices per gross ton, f.o.b. Birmingham dist. furnaces:

No. 2 fdy., 1.75 to 2.25 sil.	$14.50
No. 1 fdy., 2.25 to 2.75 sil.	15.00
Basic	14.50

Finished Steel.—Effective last week, quotations on bars, plates and structural shapes were reduced from 2.20c. to 2.10c. At the same time galvanized sheets were reduced from 3.75c. to 3.70c. Prices on other grades of sheets are unchanged. These prices are announced as minimum; on small tonnages there is a range upward of $1 to $2 a ton. The volume of new business in all important lines of finished steel, with the exception of rails, has been larger in the past three weeks than in the similar period just preceding. Prospects are reported good for important rail tonnages. Further curtailment of operations of structural steel fabricators is reported. Orders last week for structural steel were in small lots. Reinforcing bar manufacturers continue to rely on small orders to maintain operations. The Tennessee company has four open-hearths in operation at Ensley, one more than last week. Seven are active at Fairfield, and the Gulf States Steel Co. is still working all six at Alabama City.

Old Material.—Steel scrap, particularly rails, continues to show strength. Cast iron grades are slow. All prices are the same as a week ago.

Prices per gross ton, deliv'd Birmingham dist. consumers' yards:

Heavy melting steel	$13.00 to $13.50
Scrap steel rails	14.00
Short shoveling turnings	9.00
Cast iron borings	9.00
Stove plate	11.50 to 12.00
Steel axles	21.00
Iron axles	23.00
No. 1 railroad wrought	10.00 to 10.50
Rails for rolling	15.50
No. 1 cast	13.50
Tramcar wheels	13.50
Cast iron carwheels	13.00 to 13.50
Cast iron borings, chem.	13.50 to 14.00

Cast Iron Pipe.—No definite improvement is reported by pressure pipe manufacturers, as new business continues at a rate a little less than the output of the foundries. Nearly all the present buying is in small orders. Included in the pending tonnage is 3700 ft. of 6 and 8-in. pipe for Brooklet, Ga., to be awarded Sept. 16; 11,600 ft. of 4-in. and 3700 ft. of 6-in. to be awarded at St. Joseph, La., Sept. 17, and nine miles of 16 to 20-in. pipe for Griffith, Ga., to be awarded about Oct. 1. Shipments are steady at a

rate equaling output. Price remain at $37 to $38 a net ton, base Birmingham.

Coke.—Demand for foundry coke is stronger, and the movement has improved slightly over that of the previous week. Prices remain at $5 a net ton, Birmingham.

Boston

Pig Iron Prices Appear Firmer—Fourth Quarter Needs Not Fully Covered—Scrap Trend Mixed

BOSTON, Sept. 10.—Pig iron prices appear firmer, although they have not actually changed. Sales the past week approximated 7000 tons, but the only sizable one was 2000 tons of Southern iron to a Massachusetts textile machinery maker. Other sales were in small lots, mostly for fourth quarter delivery. The only sizable open inquiry is for 500 tons from a Connecticut melter. One foundry may soon come into the market for 2000 tons and another for 1000 tons. It is clear that the New England foundry industry is not fully covered for fourth quarter, and continued buying is expected this month.

Foundry iron prices per gross ton deliv'd to most New England points:

†Buffalo, sil. 1.75 to 2.25	$21.28 to $22.28
†Buffalo, sil. 2.25 to 2.75	21.78 to 22.78
*Buffalo, sil. 1.75 to 2.25	21.91 to 22.91
*Buffalo, sil. 2.25 to 2.75	22.41 to 23.41
East. Penn., sil. 1.75 to 2.25	22.65 to 23.15
East. Penn., sil. 2.25 to 2.75	23.15 to 23.65
Va., sil. 1.75 to 2.25	25.21
Va., sil. 2.25 to 2.75	25.71
*Ala., sil. 1.75 to 2.25	23.61
*Ala., sil. 2.25 to 2.75	24.11
†Ala., sil. 1.75 to 2.25	19.75 to 20.25
†Ala., sil. 2.25 to 2.75	20.25 to 20.75

Freight rates: $4.91 all rail from Buffalo, and $4.28 rail and water; $3.65 all rail from eastern Pennsylvania; $5.21 all rail from Virginia; $9.61 all rail from Alabama and $5.75 rail and water from Alabama to New England seaboard.

*All rail rate.

†Rail and water rate.

Cast Iron Pipe.—R. D. Wood & Co. were awarded the pipe, fittings, valves and hydrants required for the Gray, Me., water system, totaling about 250 tons. North Kingston, R. I., has plans for a water system. Domestic pipe makers, owing to their sold-up condition, have not been active bidders for the small amount of business available lately. French makers, on the other hand, have taken several hundred tons recently at prices reported to be slightly under domestic quotations. So far this month, 7072 pieces of French cast iron pipe have been landed at Boston. Open prices on domestic pipe are: 4 in., $46.10 to $47.10 a ton, delivered common Boston freight rate points; 6 to 12 in., $40.10 to $41.10; 16 to 20 in., $39.10. A $3 differential is asked on Class A and gas pipe.

Imports and Exports.—Imports of pig iron at Boston in August totaled 1943 tons, of which 1443 tons was Indian and the remainder Dutch. Imports in July, this year, were 950 tons, and in August, last year, 1095 tons. Imports in August were the largest in several months. Imports of ores consisted of 6750 tons of Bona, 11,380 tons of Newfoundland and 7950 tons of Bizerta, a total of 26,080 tons, as compared with 23,260 tons in July, this year, and 16,084 tons in August, 1928. During August about 3500 tons of scrap was exported to Danzig.

Coke.—By-product foundry coke consumption in New England is running somewhat ahead of that of a year ago. The price of such fuel holds firmly at $11 a ton, delivered within a $3.10 freight rate zone. Notwithstanding that New England's coke producing capacity will be greatly increased during the next six months, it is certain that ovens will be pushed to the limit to supply wants in that period.

Reinforcing Steel.—Business placed with local mill representatives the past week totaled about 200 tons of billet steel bars. About 2000 tons is still pending. On the general run of bookings the price is 2.66½c. a lb., base, from stock, but that price has been shaded on recent round lots. The rail steel bar market is inactive, with 2.26½c. a lb., base, delivered common Boston freight rate points, the open quotation.

Old Material.—Some local brokers report that heavy melting steel shipments are held up, but others continue to make liberal shipments into the Pittsburgh district, particularly to Weirton. Brokers are paying $12.50 to $12.75 a ton on cars, shipping point, for outside shipment and around $12 for Worcester, Mass., delivery. Shipments of T and girder rails also are held up, and in such cases brokers offer only $10.50 a ton for girders, against $11 and $11.25 by those making shipments. A wide spread is also noted in forge flashing quotations, some buyers offering $10 to $10.50 a ton and others $10.75 to $11. Lighter demand for axles and shafting is reflected in easier prices. New England foundries are taking machinery cast rather freely at steady prices. The export market apparently has gone stale, one report says because of labor troubles and another report because of a lack of vessel space.

Buying prices per gross ton, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$12.00 to $12.75
Scrap T rails	11.50 to 12.00
Scrap girder rails	10.50 to 11.25
No. 1 railroad wrought	11.00 to 11.50
No. 1 yard wrought	9.00 to 9.50
Machine shop turnings	7.00 to 7.50
Cast iron borings (steel works and rolling mill)	6.50 to 7.00
Bundled skeleton, long	10.00 to 10.25
Forge flashings	10.25 to 10.50
Blast furnace borings and turnings	6.00 to 6.25
Forge scrap	9.00 to 9.50
Shafting	14.00 to 14.50
Steel car axles	17.50 to 18.00
Wrought pipe 1 in. in diameter (over 2 ft. long)	9.75 to 10.00
Rails for rolling	12.50 to 13.00
Cast iron borings, chemical	9.75 to 10.00

Prices per gross ton deliv'd consumers' yards:

Textile cast	$14.00 to $14.50
No. 1 machinery cast	15.00 to 15.50
No. 2 machinery cast	13.00 to 13.25
Stove plate	11.00 to 11.50
Railroad malleable	18.00 to 18.50

Warehouse Prices, f.o.b. Boston

	Base per Lb.
Plates	3.365c.
Structural shapes—	
Angles and beams	3.365c.
Tees	3.365c.
Zees	3.465c.
Soft steel bars, small shapes	3.265c.
Flats, hot-rolled	4.15c.
Reinforcing bars	3.265c. to 3.54c.
Iron bars—	
Refined	3.265c.
Best refined	4.60c.
Norway rounds	6.60c.
Norway squares and flats	7.10c.
Spring steel—	
Open-hearth	5.00c. to 10.00c.
Crucible	12.00c.
Tie steel	4.50c. to 4.75c.
Bands	4.015c. to 5.00c.
Hoop steel	5.50c. to 6.00c.
Cold-rolled steel—	
Rounds and hex	*3.55c. to 5.55c.
Squares and flats	*4.05c. to 7.05c.
Toe calk steel	6.00c.
Rivets, structural or boiler	4.50c.

	Per Cent Off List
Machine bolts	50 and 5
Carriage bolts	50 and 5
Lag screws	50 and 5
Hot-pressed nuts	50 and 5
Cold-punched nuts	50 and 5
Stove bolts	70 and 10

*Including quantity differentials.

Buffalo

Pig Iron Inquiry Totals 20,000 Tons—Steel Mills Operating at 90 Per Cent

BUFFALO, Sept. 10.—The pig iron inquiry reported this week totals 10,000 tons, of which the largest is a 1500-ton lot of foundry for an Eastern melter. From Eastern sources comes also a 500-ton inquiry for malleable. Considerable iron in small lots has been placed, and this includes two orders, one of 800 tons of foundry and one of 900 tons. The $18 base appears to be prevailing in the East, though the differentials for silicon have been ignored in some instances. The base price in the district remains at $19.50.

Prices per gross ton, f.o.b. furnace:

No. 2 fdy., sil. 1.75 to 2.25	$19.50
No. 2X fdy., sil. 2.25 to 2.75	20.00
No. 1 fdy., sil. 2.75 to 3.25	21.00
Malleable, sil. up to 2.25	20.00
Basic	18.50
Lake Superior charcoal	27.28

Finished Iron and Steel.—There has been a slight tapering of mill operations in this district, but scarcely enough to make a difference in the general average, which is 90 per cent.

Inquiries for fabrication of structural steel have not been so heavy as heretofore, and the only job of size in immediate prospect is an apartment house in Buffalo which calls for 300 tons. A good volume of small reinforcing bar orders has been placed. The Lackawanna plant of the Bethlehem Steel Co., which in August broke a plant record with 170,000 tons of ingots, expects to equal this production this month.

Old Material.—One of the large interests is expected into the market some time this week for a considerable tonnage of No. 1 heavy melting steel. Mill operation is tapering slightly, but the demand for shipment of scrap is continuing. Little scrap is coming here from outside districts, most of it being shipped to Pittsburgh and to Weirton. A sale of cast iron borings is reported here at $12.50 and this has made a more or less active market for the blast furnace material. Dealers are reported to be paying $14.50 to $14.75 for No. 2 steel against an old order, though this condition may soften somewhat, as one of the larger users of No. 2 steel is reported to be loaded up. Some sales of short rails are reported at $19.50 and some sales of No. 1 machinery cast at $16.

Prices per gross ton, f.o.b. Buffalo consumers' plants:

Basic Open-Hearth Grades:	
No. 1 heavy melting steel	$17.50 to $18.00
No. 2 heavy melting steel	14.75 to 15.00
Scrap rails	16.50 to 17.00
Hydraul. comp. sheets	14.50 to 14.75
Hand bundled sheets	12.00 to 12.50
Drop forge flashings	14.25 to 14.50
No. 1 busheling	15.50 to 16.50
Hvy. steel axle turnings	14.00 to 14.50
Machine shop turnings	9.00 to 9.50
No. 1 railroad wrought	13.00 to 13.50
Acid Open-Hearth Grades:	
Knuckles and couplers	19.50 to 19.75
Coil and leaf springs	19.00 to 19.50
Rolled steel wheels	19.00 to 19.50
Low phos. billet and bloom ends	20.00 to 20.50
Electric Furnace Grades:	
Short shov. steel turnings	12.50 to 13.00
Blast Furnace Grades:	
Short mixed borings and turnings	11.50 to 12.25
Cast iron borings	11.50 to 12.25
No. 2 busheling	10.00 to 10.50
Rolling Mill Grades:	
Steel car axles	18.75 to 19.25
Iron axles	21.00 to 22.00
Cupola Grades:	
No. 1 machinery cast	16.00 to 17.00
Stove plate	13.00 to 13.50
Locomotive grate bars	12.50 to 13.00
Steel rails, 3 ft. and under	19.50 to 19.75
Cast iron carwheels	14.00 to 14.50
Malleable Grades:	
Industrial	18.00 to 18.50
Railroad	18.00 to 18.50
Agricultural	18.00 to 18.50
Special Grades:	
Chemical borings	12.50 to 13.50

Warehouse Prices, f.o.b. Buffalo

	Base per Lb.
Plates and struc. shapes	3.40c.
Soft steel bars	3.30c.
Reinforcing bars	2.95c.
Cold-fin. flats, sq. and hex.	4.45c.
Rounds	3.95c.
Cold-rolled strip steel	5.85c.
Black sheets (No. 24)	4.20c.
Galv. sheets (No. 24)	4.85c.
Blue ann'l'd sheets (No. 10)	3.50c.
Com. wire nails, base per keg	$3.60
Black wire, base per 100 lb.	3.75

St. Louis

Pig Iron Buying Improves and Price Situation Is Firmer—Steel Orders Expand Slightly

ST. LOUIS, Sept. 10.—A further improvement in buying, as well as in the general tone of the pig iron market, is reported. Sales of the St. Louis Gas & Coke Corporation, which showed a substantial gain over those of the previous week, were approximately 6000 tons, while an additional 1000 tons was sold by Southern makers. The market is firmer because of a strengthening in the Southern situation. The makers in that section are said to have taken all the business they care for at the recent low levels. Melters are buying conservatively, some still having a feeling of uncertainty as to the future course of prices. The Granite City maker's sales included two lots of 1000 tons each to northern Illinois melters, 600 tons to a local machinery manufacturer, 300 tons to a northern Iowa jobbing foundry, 270 tons to a local engine builder and 200 tons to a Kansas machinery manufacturer, all for the remainder of the year. The Granite City furnace shipped 31,000 tons in August, compared with 20,000 in August, 1928.

Prices per gross ton at St. Louis:

No. 2 fdy., sil. 1.75 to 2.25, f.o.b. Granite City, Ill.	$19.50 to $20.00
Malleable, f.o.b. Granite City	20.00
N'th'n No. 2 fdy., deliv'd St. Louis	22.16
Southern No. 2 fdy., deliv'd	$16.92 to 18.92
Northern malleable, deliv'd	22.16
Northern basic, deliv'd	22.16

Freight rates: 75c. (average) Granite City to St. Louis; $2.16 from Chicago; $4.42 from Birmingham.

Coke.—An improvement in buying of domestic grades of coke by dealers is reported, especially by dealers in St. Louis. With the melt well maintained, there is a good demand for foundry coke, and shipments of furnace grades in the district continue heavy.

Finished Iron and Steel.—The Granite City Steel Co. has opened its books for fourth quarter business on sheets and plates at the prices which prevailed for third quarter, as follows: Galvanized, 3.70c.; black, 3.05c.; blue annealed, 13-gage, 2.45c.; blue annealed light plate, 10-gage, 2.30c.; plates, 2.05c., all f.o.b. Gary. The company is now operating on 100 per cent schedules in all departments except plates, where operations are on an 85 to 90 per cent basis. While there has been a let-up in incoming business, an improvement was noted during the past week. Warehouse business during August was said to be about equal to that of August, 1928, but slightly less than July of this year. The structural trade is quiet.

Old Material—The market for old material is a bit easier than a week ago, with dealers paying $14.50 to $15 for No. 1 heavy melting or shoveling steel and $14 to $14.50 for No. 2 heavy melting or shoveling steel. The movement of old material to this market, especially from country dealers, is said to be on the increase. On the other hand, buying by consumers is light. Railroad lists: Baltimore & Ohio, 19,070 tons; Atchison, Topeka & Santa Fe, 7860 tons; Wabash, 3980 tons; International-Great Northern, 900 tons; Ann Arbor, 397 tons; New Orleans Great Northern, 105 tons; St. Louis-San Francisco, 22 carloads; Nashville, Chattanooga & St. Louis, 17 carloads.

Dealers' buying prices per gross ton, f.o.b. St. Louis district:

No. 1 heavy melting or shoveling steel	$14.50 to $15.00
No. 2 heavy melting or shoveling steel	14.00 to 14.50
No. 1 locomotive tires	15.50 to 16.00
Miscel. stand.-sec. rails including frogs, switches and guards, cut apart	17.00 to 17.50
Railroad springs	19.50 to 20.00
Bundled sheets	10.50 to 11.00
No. 2 railroad wrought	14.50 to 15.00
No. 1 busheling	10.00 to 10.50
Cast iron borings and shoveling turnings	9.50 to 10.00
Iron rails	13.00 to 13.50
Rails for rolling	17.25 to 17.75
Machine shop turnings	7.50 to 8.00
Heavy turnings	10.00 to 10.50
Steel car axles	19.50 to 20.00
Iron car axles	26.50 to 27.00
Wrot. iron bars and trans.	21.50 to 22.00
No. 1 railroad wrought	13.75 to 14.25
Steel rails, less than 3 ft.	18.00 to 18.50
Steel angle bars	15.25 to 15.75
Cast iron carwheels	15.00 to 15.50
No. 1 machinery cast	15.25 to 15.75
Railroad malleable	16.00 to 16.50
No. 1 railroad cast	14.75 to 15.25
Stove plate	13.00 to 13.50
Agricult. malleable	15.25 to 15.75
Relay. rails, 60 lb. and under	20.50 to 23.50
Relay. rails, 70 lb. and over	26.50 to 29.00

The Republic Iron & Steel Co., Youngstown, will install three Rust zone-control triple-fired continuous slab heating furnaces in its plate mill. Each furnace will have an output of 25 tons an hour and will be fired with producer gas. The triple-fired design embodies a soaking chamber as well as a heating chamber.

Warehouse Prices, f.o.b. St. Louis

	Base per Lb.
Plates and struc. shapes	3.25c.
Bars, soft steel or iron	3.15c.
Cold-fin. rounds, shaftings, screw stock	3.75c.
Black sheets (No. 24)	4.25c.
Galv. sheets (No. 24)	5.10c.
Blue ann'l'd sheets (No. 10)	3.45c.
Black corrug. sheets (No. 24)	4.30c.
Galv. corrug. sheets	5.15c.
Structural rivets	3.95c.
Boiler rivets	3.95c.
	Per Cent Off List
Tank rivets, 7/8-in. and smaller, 100 lb. or more	65
Less than 100 lb.	60
Machine bolts	60
Carriage bolts	60
Lag screws	60
Hot-pressed nuts, sq., blank or tapped, 200 lb. or more	60
Less than 200 lb.	50
Hot-pressed nuts, hex., blank or tapped, 200 lb. or more	60
Less than 200 lb.	50

Cincinnati

Pig Iron Sales Total 12,000 Tons—Southern Prices Stiffen —Sheet Sales Increase—Scrap Easier

CINCINNATI, Sept. 10.—Sales of pig iron the past week totaled approximately 12,000 tons. Many district consumers entered the market to cover for the remainder of the third quarter and in many instances for the fourth quarter. Of the tonnage placed, about half went to Northern furnaces and the remainder to Southern producers. The Northern iron was sold on present schedules without concessions, but the Southern iron went at prices which figure back to $13.50 and $14, base Birmingham. Although this price variance still indicates softness in the Southern market, the tendency is toward higher quotations, causing the Southern market here to have the appearance of greater firmness. Southern furnaces, which about a month ago were reported to be accepting orders at $13, are now maintaining quotations at $13.50. Even at this price, selling agents are writing orders subject to acceptance of the furnace, because in a few instances such orders were rejected and $14 was authorized as the lowest quotation. Among the week's orders was one from a Springfield, Ohio, consumer for 500 tons of Northern iron and another from a Sidney, Ohio, buyer for 200 tons of Northern, 200 tons of Southern and 100 tons of silvery. Except for an inquiry for 300 to 400 tons of Southern iron from a Louisville, Ky., consumer, there is no sizable business before the trade.

Prices per gross ton, deliv'd Cincinnati:

So. Ohio fdy., sil. 1.75 to 2.25	$19.89 to $20.39
Ala. fdy., sil. 1.75 to 2.25	17.19 to 18.19
Ala. fdy., sil. 2.25 to 2.75	17.69 to 18.69
Tenn. fdy., sil. 1.75 to 2.25	17.19 to 18.19
S'th'n Ohio silvery, 8 per cent	26.89

Freight rates, $1.89 from Ironton and Jackson, Ohio; $3.69 from Birmingham.

Finished Material.—New tonnage placed with district sheet mills last week exceeded production, adding still further to present backlogs. The entry of automotive manufacturers for fourth quarter sheet requirements, combined with the steady demand from the electrical equipment, highway and roofing fields, have added to orders. With mills promising three to four weeks as the earliest shipments, buyers are anticipating their needs at least 30 to 40 days. Prices continue firm in all grades of sheets except galvanized. Conflicting reports of concessions in the Southeast have contributed an undertone of uncertainty to this product.

Coke.—Specifications for beehive and by-product foundry coke are a trifle better than last month, although in a few instances a slight recession is noticed. The only new business reported during the week was an order from a southern Ohio consumer for 5000 tons of beehive foundry coke to cover requirements for the next eight months.

Old Material. — Although price schedules have not been changed during the past week, continued reluctance of mills to pay higher prices for old material has forced dealers to lean toward the bottom of price spreads in bidding for scrap. Accordingly, while the market appears firm on the surface, there is a slight undertone of softness, with buyers taking only what they need and dealers covering for old commitments and marking time. The supply of the better grades of scrap has increased somewhat, bringing a little relief from the tight situation that has prevailed in the last two months. The Southern Railway is offering its usual list of old material. The Chesapeake & Ohio has published a list of 6800 tons and the Norfolk & Western is offering 7500 tons.

Dealers' buying prices per gross ton, f.o.b. cars, Cincinnati:

Heavy melting steel	$14.25 to $14.75
Scrap rails for melting	14.25 to 14.75
Loose sheet clippings	9.00 to 9.50
Bundled sheets	**11.00 to 11.50**
Cast iron borings	9.25 to 9.75
Machine shop turnings	8.50 to 8.75
No. 1 busheling	10.50 to 11.00
No. 2 busheling	7.00 to 7.50
Rails for rolling	14.50 to 15.00
No. 1 locomotive tires	14.25 to 14.75
No. 2 railroad wrought	14.25 to 14.75
Short rails	18.50 to 19.00
Cast iron carwheels	12.75 to 13.25
No. 1 machinery cast	19.00 to 19.50
No. 1 railroad cast	15.25 to 15.75
Burnt cast	10.25 to 10.75
Stove plate	10.25 to 10.75
Brake shoes	10.25 to 10.75
Agricultural malleable	14.25 to 14.75
Railroad malleable	15.25 to 15.75

Warehouse Prices, f.o.b. Cincinnati

	Base per Lb.
Plates and struc. shapes	3.40c.
Bars, soft steel or iron	3.30c.
New billet reinforc. bars	3.15c.
Rail steel reinforc. bars	3.00c.
Hoops	4.05c.
Bands	3.50c.
Cold-fin. rounds and hex.	3.85c.
Squares	4.35c.
Black sheets (No. 24)	4.05c.
Galvanized sheets (No. 24)	4.90c.
Blue ann'l'd sheets (No. 10)	3.45c.
Structural rivets	3.85c.
Small rivets	65 per cent off list
No. 9 ann'l'd wire, per 100 lb.	$3.00
Com. wire nails, base per keg	2.85
Cement c't'd nails, base 100 lb. keg	2.85
Chain, per 100 lb.	8.75
	Net per 100 Ft.
Lap-weld steel boiler tubes, 2-in.	$16.00
4-in.	33.00
Seamless steel boiler tubes, 2-in.	17.00
4-in.	34.00

Canada

Pig Iron Buying Gains Moderately

TORONTO, ONT., Sept. 10.—Sales of merchant iron were at a good level throughout the week, the total showing an improvement over that of previous weeks. While some future buying is being done, most of this business is being held up until producers formally open their books, which probably will be in about a week. The daily melt continues at a high level. Prices are unchanged.

Prices per gross ton:

Delivered Toronto	
No. 1 fdy., sil. 2.25 to 2.75	$24.60
No. 2 fdy., sil. 1.75 to 2.25	24.10
Malleable	24.60
Delivered Montreal	
No. 1 fdy., sil. 2.25 to 2.75	$26.00
No. 2 fdy., sil. 1.75 to 2.25	25.50
Malleable	26.00
Basic	24.50
Imported Iron, Montreal Warehouse	
Summerlee	$33.50
Carron	33.00

Structural Steel. — Awards during the past week were small in number and tonnage. Most of the buying was in lots under 200 tons each. Prospective structural steel business is large.

Old Material.—Buying is becoming more general, and tonnages moving are individually larger than those of recent weeks. Prices are firm but unchanged.

Dealers' buying prices:

	Toronto	Montreal
	Per Gross Ton	
Heavy melting steel	$10.00	$8.50
Rails, scrap	11.00	9.00
No. 1 wrought	10.00	12.00
Machine shop turnings	7.50	5.00
Boiler plate	7.50	6.00
Heavy axle turnings	8.00	7.50
Cast borings	7.50	5.00
Steel turnings	7.50	6.50
Wrought pipe	6.00	6.00
Steel axles	15.00	20.00
Axles, wrought iron	17.90	22.00
No. 1 machinery cast	....	17.00
Stove plate	....	13.00
Standard carwheels	....	16.00
Malleable	....	13.00
	Per Net Ton	
No. 1 mach'ry cast	$16.00	....
Stove plate	12.00	....
Standard carwheels	15.00	....
Malleable scrap	14.00	....

Detroit

Automobile Industry's Activity Up Slightly

DETROIT, Sept. 10.—Production activity in the automotive industry as a whole has shown some improvement in the last two weeks. In August several of the automobile companies exceeded their July production. These include Buick, Ford, Graham-Paige, Hupp and Packard.

The accompanying table gives the

	July	August	September Estimate
Auburn	2,026	2,509	3,900
Buick	26,279	28,971	26,550
Chevrolet	137,831	109,968	100,000
Ford	180,804	205,634	200,000
Franklin	1,325	1,150	1,000
Graham-Paige	4,849	6,576	5,500
Hudson and Essex	23,707	17,316	15,000
Hupp	2,494	5,255	5,000
Packard	4,600	5,336	5,000
Nash	6,672	3,624	3,000

available August production figures.

The Murray Body Corporation of America is producing 1250 bodies a day, increased from 400 a day three months ago. Full capacity production will extend through the current month on bodies for Chrysler, Dodge, Hupp and Ford cars. A further increase in facilities will be available in about 90 days, which will bring the total daily capacity to approximately 1750 units.

The Fleetwood Body Corporation has recently established a Detroit plant for Cadillac and La Salle chassis. The new unit, when under full production, will employ about 200 men and occupy 635,000 sq. ft. of floor space.

Steel Corporation's Orders Drop 429,966 Tons

The United States Steel Corporation on Tuesday reported the largest drop in its unfilled orders since the spring of 1928. The decline was 429,966 tons, leaving the total as of Aug. 31 at 3,658,211 tons, which was 34,168 tons above that of Aug. 31, 1928.

It was the fourth consecutive monthly decrease, but the three which preceded were much smaller. At the end of May the orders declined 123,602 tons; in June there was a further reduction of 47,257 tons, and in July the decrease was 168,733 tons.

Unfilled tonnage at the end of each month for the past three years follows:

	1929	1928	1927
August	3,658,211	3,624,043	3,196,027
July	4,088,177	3,570,927	3,142,014
June	4,256,910	3,637,000	3,058,246
May	4,304,167	3,416,822	3,050,941
April	4,427,563	3,872,133	3,456,132
March	4,410,718	4,235,206	3,553,140
February	4,141,341	4,298,189	3,597,119
January	4,109,487	4,275,947	3,800,177
	1928	1927	1926
December	3,976,712	3,972,974	3,960,696
November	3,673,000	3,454,441	3,807,447
October	3,751,030	3,341,000	3,683,661
September	3,698,368	3,148,113	3,593,500

Use of Business Statistics Proves a Stabilizer

WASHINGTON, Sept. 10.—Discussing business stability at a conference with the press yesterday, Secretary of Commerce R. P. Lamont said that an examination of the monthly statistics of industrial activity in the United States since the war shows a reduction in range of those variations which are of a seasonal character. Not only has there been, since 1921, an unusually prolonged period substantially free from so-called crises or ups and downs in economic activity representing the so-called business cycle, but even those variations from month to month of the year, which are the result of seasonal influences and which were formerly considered inevitable, have been cut down in extent, the Secretary declared.

"This result must be attributed largely to greater foresight on the part of business men producing and selling commodities as well as on the part of buyers of goods," he continued. "An important factor in making possible the exercise of such foresight is the great and growing volume of current statistical information furnished to the public by the government and by private organizations. Moreover, business men, and in fact all people, have learned to make more constant and more intelligent use of such statistics in the guidance of their affairs."

Republic to Build New Conduit Department

The Republic Iron & Steel Co. on Tuesday announced plans for a new mechanical tubing and conduit department to be built at Warren, Ohio, involving an expenditure of $1,000,000. Plans have been prepared by the company's engineering department, according to President E. T. McCleary, and will be submitted to directors at their next meeting.

The plant will employ about 500 men, and will represent additional capacity. The Republic company now operates a conduit department in Brooklyn, which commenced operations a month ago.

Shipping Board to Sell 22 Vessels for Scrap

WASHINGTON, Sept. 10.—Bids will be received up to Oct. 8 by the Shipping Board for the purchase for scrapping of 22 steel cargo vessels, 12 of which are laid up at Norfolk, Va., eight at New York and one each at Mobile, Ala., and New Orleans. In addition to bids contemplating scrapping, the board will also consider propositions for the purchase and conversion to Diesel propelled vessels, or to barges. It will also be provided in the advertisement that bids contemplating scrapping of steamers abroad will be given consideration.

Chromium Plating Now a Well Recognized Industry

From very small and modest beginnings, dating back only a few years, the chromium plating industry has had a phenomenal growth. Starting with the small installation at Columbia University, which demonstrated the far-reaching industrial applications and the adaptability of chrome plating to commercial practice, there are today some 500 plants located in all parts of the world.

At the coming meeting of the American Electrochemical Society to be held at Pittsburgh, Sept. 19 to 21, Prof. Frank C. Mathers and Chester M. Alter of the University of Indiana, Robert J. Piersol, of Pittsburgh, Lawrence E. Stout and A. W. Petchaft, of St. Louis, and H. H. Willard and R. Schneidewind, of Ann Harbor, Mich., will be among the contributors on their experiences in the chromium electroplating art.

COMING MEETINGS

SEPTEMBER

American Electrochemical Society, Sept. 19 to 21. Fall meeting, William Penn Hotel, Pittsburgh. Colin G. Fink, Columbia University, New York, secretary.

American Refractories Institute. Sept. 24 and 25. Fall meeting with Refractories Division of the American Ceramic Society, Deshler-Wallick Hotel, Columbus, Ohio. Dorothy A. Texter, Oliver Building, Pittsburgh, secretary.

American Drop Forging Institute. Sept. 25 to 27. Fall meeting, Buckwood Inn, Shawnee-on-Delaware, Pa. C. H. Smith, president, Steel Improvement & Forge Co., Cleveland, chairman of convention committee.

Concrete Reinforcing Steel Institute. Sept. 30 to Oct. 2. Semi-annual meeting, Wawasee Hotel, Wawasee, Ind. M. A. Beeman, 2112 Tribune Tower, Chicago, secretary.

National Industrial Advertisers' Association. Sept. 30 to Oct. 2. Eighth annual convention, Gibson Hotel, Cincinnati. Benjamin H. Miller, 420 Lexington Avenue, New York, secretary.

National Machine Tool Builders' Association. Sept. 30 to Oct. 4. Second machine tool exposition, Public Auditorium, Cleveland. E. F. DuBrul, 617 Vine Street, Cleveland, manager.

National Safety Council. Sept. 30 to Oct. 4. Eighteenth annual congress, Stevens Hotel, Chicago. W. H. Cameron, 108 East Ohio Street, Chicago, managing director.

OCTOBER

Society of Automotive Engineers. Oct. 2 and 3. Production meeting, Hotel Cleveland, Cleveland. Coker F. Clarkson, 29 West Thirty-ninth Street, New York, secretary.

American Society of Mechanical Engineers. Oct. 7 to 10. Third national fuels meeting, Bellevue-Stratford Hotel, Philadelphia. Calvin W. Rice, 29 West Thirty-ninth Street, New York, secretary.

Metallurgical and Mining Advisory Boards (Carnegie Institute and Bureau of Mines). Oct. 18. Third open meeting, 4800 Forbes Street, Pittsburgh. John D. Beatty, Carnegie Institute of Technology, Pittsburgh, secretary.

American Society of Mechanical Engineers. Oct 21 to 23. Sectional meeting, Portage Hotel, Akron, Ohio. Calvin W. Rice, 29 West Thirty-ninth Street, New York, secretary.

Society of Industrial Engineers. Oct. 23 to 25. Sixteenth national convention, Hotel Statler, Cleveland. George C. Dent, 205 West Wacker Drive, Chicago, secretary.

American Gear Manufacturers Association. Oct. 24 to 26. Fall meeting, Benjamin Franklin Hotel, Philadelphia. T. W. Owen, 3608 Euclid Avenue, Cleveland, secretary.

American Iron and Steel Institute. Oct. 25. Thirty-sixth general meeting, Hotel Commodore, New York. E. A. S. Clarke, 75 West Street, New York, secretary.

Non-Ferrous Metal Markets

Copper Sales Are Largest on Record—Lead Active—Tin and Zinc Dull

New York, Sept. 10.

Copper.—Sales in the week ended Saturday, Sept. 7, amounted to more than 100,000 tons, thereby setting a new record for the industry. Demand from both domestic and foreign buyers was unusually heavy and was stimulated by a threatened advance in prices. With the exception of a few orders for early December delivery, users are asking for shipment in the next three months and the fact that they apparently are not anticipating their requirements further ahead shows to what a low point they had permitted stocks to dwindle during the summer. With its competitors refusing to follow its lead in raising quotations on electrolytic copper ¼c. a lb., the leading producer has abandoned its attempt to secure business at 18.25c., delivered in the Connecticut Valley, and the market again is steady at 18c. Buying yesterday and today dropped off sharply as a natural consequence of the abnormal activities of the past two weeks and of the disappearance of the likelihood of higher prices. Late this week the August figures on copper stocks will appear. Some producers are of the opinion that they will reveal a further slight increase in the total blister and refined stocks, although the effects of the curtailment of output were reflected in the June and July statistics and therefore the stocks on Aug. 31 may have been approximately the same as at the end of July. Whatever the figures may be, they are not likely to affect prices, which producers believe will stay at the present level for an indefinite period. Lake copper has been showing strength and is steady at 18c. to 18½c., delivered.

Lead.—The volume of business in the past week was on a par with that of the previous week, with the result that sales in the past fortnight were the largest of the year. It is only natural, under the circumstances, for producers to expect an easing off in buying this week. Practically all orders call for delivery in September, October and the early part of November. On Thursday, Sept. 5, the American Smelting & Refining Co. increased its price to 6.90c., New York, and the leading interest in the West advanced its quotations a corresponding amount to 6.70c., St. Louis. The market is now firm at these figures.

THE WEEK'S PRICES, CENTS PER POUND FOR EARLY DELIVERY

	Sept. 10	Sept. 9	Sept. 7	Sept. 6	Sept. 5	Sept. 4
Lake copper, New York	18.12½	18.12½	18.12½	18.12½	18.12½	18.12½
Electrolytic copper, N. Y.*	17.75	17.75	17.75	17.75	17.75	17.75
Straits tin, spot, N. Y.	45.37½	45.50	....	45.50	45.75	45.75
Zinc, East St. Louis	6.80	6.80	6.80	6.80	6.80	6.80
Zinc, New York	7.15	7.15	7.15	7.15	7.15	7.15
Lead, St. Louis	6.70	6.70	6.70	6.70	6.70	6.55
Lead, New York	6.90	6.90	6.90	6.90	6.90	6.75

*Refinery quotation; price ¼c. higher delivered in the Connecticut Valley.

Rolled Products

Prices on rolled non-ferrous products are unchanged from those prevailing one week ago.

List Prices, Per Lb., f.o.b. Mill

On Copper and Brass Products, Freight up to 75c. per 100 Lb. Allowed on Shipments of 500 Lb. or Over

Sheets—
- High brass ..... 23.25c.
- Copper, hot rolled ..... 26.75c.
- Zinc ..... 10.25c.
- Lead (full sheets) ... 11.00c. to 11.25c.

Seamless Tubes—
- High brass ..... 28.25c.
- Copper ..... 29.25c.

Rods—
- High brass ..... 21.25c.
- Naval brass ..... 24.00c.

Wire—
- Copper ..... 19.87½c.
- High brass ..... 23.75c.

Copper in Rolls ..... 26.75c.

Brazed Brass Tubing ..... 30.87½c.

Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of Mississippi River and also to St. Louis on shipments to points west of that river.

- Sheets, 0 to 10 gage, 3 to 30 in. wide ..... 33.00c.
- Tubes, base ..... 42.00c.
- Machine rods ..... 34.00c.

Chicago Warehouse

(Prices Cover Trucking to Customers' Doors in City Limits)

Sheets—	Base per Lb.
High brass	23.25c.
Copper, hot rolled	27.75c.
Copper, cold rolled, 14 oz. and heavier	30.00c.
Zinc	10.75c.
Lead, wide	11.35c.
Seamless Tubes—	
Brass	28.25c.
Copper	29.25c.
Brass Rods	21.25c.
Brazed Brass Tubes	31.00c.

New York or Cleveland Warehouse

Delivered Prices, Base Per Lb.

Sheets—	
High brass	21.12½c. to 22.12½c.
Copper, hot rolled, base sizes	27.75c. to 28.75c.
Copper, cold rolled, 14 oz. and heavier, base sizes	30.00c. to 31.00c.
Seamless Tubes—	
Brass	26.00c. to 27.00c.
Copper	29.12½c. to 30.12½c.
Brazed Brass Tubes	29.12½c. to 30.12½c.
Brass Rods	18.87½c. to 19.87½c.

New York Warehouse

Delivered Prices, Base Per Lb.

- *Zinc sheets (No. 9), casks* ..... 10.50c. to 11.00c.
- *Zinc sheets, open* ..... 11.50c. to 12.00c.

Metals from New York Warehouse

Delivered Prices, Per Lb.

- Tin, Straits pig ..... 47.50c. to 48.50c.
- Tin, bar ..... 50.00c. to 51.00c.
- Copper, Lake ..... 19.50c.
- Copper, electrolytic ..... 19.25c.
- Copper, casting ..... 19.00c.
- Zinc, slab ..... 7.75c. to 8.25c.
- Lead, American pig ... 7.62½c. to 8.12½c.
- Lead, bar ..... 9.62½c. to 10.12½c.
- Antimony, Asiatic ..... 11.00c. to 11.50c.
- Aluminum No. 1 ingots for remelting (guaranteed over 99% pure) ... 25.00c. to 26.00c.
- Alum. ingots, No. 12 alloy ..... 24.00c. to 25.00c.
- Babbitt metal, commercial grade ..... 25.00c. to 35.00c.
- Solder, ½ and ½ ..... 30.00c. to 31.00c.

Metals from Cleveland Warehouse

Delivered Prices, Per Lb.

- Tin, Straits pig ..... 50.75c.
- Tin, bar ..... 52.75c.
- Copper, Lake ..... 19.50c.
- Copper, electrolytic ..... 19.25c.
- Copper, casting ..... 18.75c.
- Zinc, slab ..... 7.75c. to 8.00c.
- Lead, American pig ..... 7.40c. to 7.65c.
- Lead, bar ..... 9.75c.
- Antimony, Asiatic ..... 16.00c.
- Babbitt metal, medium grade ..... 18.75c.
- Babbitt metal, high grade ..... 55.00c.
- Solder, ½ and ½ ..... 31.75c.

Old Metals, Per Lb., New York

Buying prices represent what large dealers are paying for miscellaneous lots from smaller accumulators and selling prices are those charged customers after the metal has been properly prepared for their uses.

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible	14.75c.	16.25c.
Copper, hvy. and wire	14.50c.	15.75c.
Copper, light and bottoms	12.50c.	13.75c.
Brass, heavy	8.50c.	9.50c.
Brass, light	7.50c.	8.50c.
Hvy. machine composition	12.00c.	13.00c.
No. 1 yel. brass turnings	9.75c.	10.50c.
No. 1 red brass or compos. turnings	11.25c.	12.25c.
Lead, heavy	5.25c.	5.75c.
Lead, tea	4.25c.	5.25c.
Zinc	3.50c.	4.25c.
Sheet aluminum	14.00c.	16.00c.
Cast aluminum	12.25c.	14.25c.

Tin.—Dullness continues in spot Straits tin. In fact, buying the past week was in such negligible volume that the market was virtually at a standstill. The few sales made were for delivery in the next two months. There is a more plentiful supply of spot tin than a few weeks ago. The quietness has not materially affected quotations, which have declined only slightly during the week. Spot Straits tin was quoted today at 45.37½c., New York. At London, the downward movement of prices has halted. Spot standard is quoted at £204 5s., futures standard at £208 7s. 6d. and spot Straits at £208 5s. The Singapore market today was £213 5s.

Zinc.—With consumers trying to break prices by refraining from buying their usual requirements and with producers determined to maintain the present schedule of 6.80c., East St. Louis, for prime Western zinc, little business has been transacted in the past week. Meanwhile, stocks in the hands of users are far less than normal and sellers are confident that customers cannot long hold off replenishing their supplies.

Antimony.—The market is sluggish and consumers are manifesting little or no interest. Spot material is quoted at 8.75c. a lb., New York, duty paid. No improvement in the immediate future is expected.

Nickel.—In wholesale lots, ingot nickel is priced at 35c. a lb., shot nickel at 36c. and cathode electrolytic nickel at 35c.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted at 22.90c. a lb., delivered.

Non-Ferrous Metals at Chicago

Sept. 10.—This market is strong and active. Shipments against old orders are larger. Lead prices have advanced. The old metal market is quiet and prices are unchanged.

Prices per lb., in carload lots: Lake copper, 18.50c.; tin, 47.25c.; lead, 6.80c.; zinc, 6.90c.; in less-than-carload lots, antimony, 9.85c. On old metals we quote copper wire, crucible shapes and copper clips, 14c.; copper bottoms, 11.50c.; red brass, 11.50c.; yellow brass, 8c.; lead pipe, 4.50c.; zinc, 3.25c.; pewter, No. 1, 24.50c.; tin foil, 26c.; block tin, 36c.; aluminum, 12.87½c.; all being dealers' prices for less-than-carload lots.

Fabricated Structural Steel

Awards Total 44,000 Tons—Major Part of Tonnage Is For Non-Industrial Structures

STRUCTURAL steel lettings, at 44,000 tons, showed a substantial gain over those of the previous week. About 70 per cent of the tonnage will go into hotels, educational buildings, apartment houses and other non-industrial structures. Outstanding among awards was 24,000 tons for the new Waldorf-Astoria Hotel in New York. Electrification work on the Pennsylvania Railroad will require 2400 tons.

Inquiries, totaling 26,000 tons, include 9300 tons for a New York subway section, 3000 tons for a telephone building at Pittsburgh and 2400 tons for an office building at Des Moines, Iowa. Awards follow:

WATERVILLE, ME., 165 tons, indoor field cage and gymnasium, to Lyons Iron Works.

KEENE, N. H., 125 tons, publishing plant, to New England Structural Co.

HANOVER, N. H., 107 tons, Dartmouth School, to Palmer Steel Co.

INWOOD, VT., 500 tons, substation for Connecticut River Development Co., to American Bridge Co.

BOSTON, 400 tons, school of arts, to A. L. Smith Iron Works.

BOSTON, 320 tons, dance hall and stores in Dorchester district, to New England Structural Co.

TEWKSBURY, MASS., 200 tons, substation for New England Power Co., to American Bridge Co.

WALTHAM, MASS., 300 tons, hospital, to Eastern Bridge & Structural Co.

BEVERLY, MASS., 100 tons, indoor tennis court, to New England Structural Co.

HARTFORD, CONN., 235 tons, First National Stores unit, to Lehigh Structural Steel Co.

RYE, N. Y., 150 tons, Church of the Resurrection, to Guibert Steel Co.

PORT CHESTER, N. Y., 400 tons, United Hospital, to Porcupine Boiler Works, Bridgeport, Conn.

STATE OF NEW YORK, 150 tons, highway bridge, to American Bridge Co.

NEW YORK, 24,000 tons, Waldorf-Astoria Hotel, to McClintic-Marshall Co.

NEW YORK CENTRAL RAILROAD, 1700 tons, viaduct at 241st Street, New York, to Harris Structural Steel Co.

NEW YORK CENTRAL RAILROAD, 500 tons, fabricated steel and sheet piling, docks at Toledo, Ohio, to Bethlehem Steel Co.

PENNSYLVANIA RAILROAD, 2400 tons, electrification work; 2000 tons to Bethlehem Steel Co. and 400 tons to American Bridge Co.

CAMDEN, N. J., 800 tons, City Athletic Club, to unnamed fabricator.

GRASSELLI, N. J., 200 tons, Grasselli Chemical Co., to Guibert Steel Co.

CHARLOTTE, N. C., 100 tons, Walsh Motor Co., to McClintic-Marshall Co.

HAVANA, CUBA, 2000 tons, National Hotel, to American Steel Corporation.

DETROIT, 107 tons, River Rouge bridge, to McClintic-Marshall Co.

CANTON, OHIO, 550 tons, Onesto Hotel, to Hiner Structural Steel Co.

CALION, ARK., 500 tons, bridge, to Illinois Steel Bridge Co., Jacksonville, Ill.

TACOMA, WASH., 100 tons, redecking Eleventh Street bridge, to Star Iron Works.

HILLYARD, WASH., 180 tons, boiler shop for Great Northern Railroad Co., to Hoffus Steel & Equipment Co.

VANCOUVER, B. C., 4000 tons, plates, pipe line for city, to Harrison & Lamond.

VANCOUVER, 750 tons, plates, pipe line, to Vancouver Engineering Works.

PORTLAND, ORE., 1000 tons additional, St. John's River bridge, to Wallace Bridge & Structural Steel Co.

PORTLAND, 300 tons, approaches to St. John's River bridge, to Gilpin Construction Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

LYNN, MASS., 300 tons, theater.

WEST SPRINGFIELD, MASS., 200 tons, engine house.

ATTLEBORO, MASS., 150 tons, Masonic Temple.

WOBURN, MASS., 130 tons, electric lighting plant.

NEW YORK, 9300 tons, section 9, route 101, of subway at Sixth Avenue and Forty-first Street.

NEW YORK, 500 tons, tennis court building for Thompson-Starrett Co. on East Sixty-fourth Street.

BROOKLYN, 400 tons, addition to Brooklyn Edison Co.

BUFFALO, 300 tons, apartment building, 1290 Delaware Avenue for Lasser-Preyer Co.

PITTSBURGH, 3000 tons, addition to Bell Telephone Building.

NICKEL PLATE RAILROAD, 600 tons, bridge at Cleveland.

SAGINAW, MICH., 1900 tons, telephone building.

DES MOINES, IOWA, 2400 tons, office building.

DENVER, 2100 tons, viaduct.

DOUGLAS, ARIZ., 850 tons, oil treating plant for Phelps Dodge Corporation.

BREMERTON, WASH., 3000 tons, plates, pipe line; general contract to James Coyne, Portland.

EVERETT, WASH., 10,000 tons, plates, riveted pipe line; Western Pipe & Steel Co., low bidder.

Farm Implement Exports to Canada

An increase of $1,281,321 in exports of farm implements to Canada was noted for the first six months of 1929, as compared with a similar period of last year, according to George Bell, chief of the agricultural implements division of the Department of Commerce. It is believed that approximately three-fourths of this equipment will be used in the prairie provinces of Manitoba, Saskatchewan and Alberta. For the half-year period of 1929, out of a world total of $72,068,572, Canada received machinery amounting to $24,699,919, as compared with $23,418,598 for a like period in 1928, out of a world total of $54,011,857. The entire amount shipped to Canada for the whole of 1928 is placed at $46,131,912, out of a world total of $116,524,084.

Tractor engines, gas or gasoline, formed the bulk of the exports, with threshing machines, plows and harvesters following in order named.

The combined deliveries of brass and bronze ingots and billets by the members of the Non-Ferrous Ingot Metal Institute for July amounted to 7698 tons.

PERSONAL

JAMES. A. CAMPBELL, president, Youngstown Sheet & Tube Co., Youngstown, will observe his seventy-fifth birthday on Sept. 11, and will be tendered a testimonial dinner by friends and business associates in that city on the evening of that day. No formal program has been arranged. Mr. Campbell has been president of the Sheet & Tube company for 25 years and his identification with the organization began some years before. The Youngstown Rotary Club will have Mr. Campbell as its guest of honor at its weekly luncheon on his birthday.

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JOHN GOETZ, who recently retired as vice-president and works manager of the Kempsmith Mfg. Co., Milwaukee, has organized the Goetz-Voss Corporation, Wauwatosa, a suburb of Milwaukee, to engage in the practice of consulting engineering in the designing and production of special machinery, fixtures, etc., for the metal-working industries. With him is associated Arthur E. Voss. Work has been completed on the first unit of the machine shop, tool room, experimental laboratory and office, at 430 State Street, Wauwatosa.

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S. C. POHLMAN, vice-president and general manager, California Wire Cloth Co., is making a tour of some of the wire fabricating plants in the East.

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FRED R. SEGHERS, formerly associated with the Chicago office of the Toledo Machine & Tool Co., Toledo, Ohio, has been appointed district sales representative for the Ferracute Machine Co., Bridgeton, N. J.

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J. GAFFNEY has been appointed to the newly created position of assistant superintendent of the Moline Malleable Iron Co., Moline, Ill.

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W. D. MOORE, president, American Cast Iron Pipe Co., Birmingham, and an officer of the Sand Spun Patents Corporation, the licensing company for sand spun centrifugal pipe, sailed for England last week to negotiate with British foundries on licenses for the sand spun process.

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VIRGIL JORDAN has resigned as chief economist of the National Industrial Conference Board, New York, and has become associated with the McGraw-Hill Publishing Co. as economist and associate editor of the *Business Week*.

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IRVING P. CHURCH, professor emeritus of applied mechanics and hydraulics at Cornell University, has been awarded the Lamme medal by the Society for the Promotion of Engineering Education.

H. F. HAWORTH and C. T. SKIPPER, of the Leyland Motor Co., England, arrived in New York on Sept. 9 and will make a tour of inspection of American automobile and machine tool plants with a view to purchasing new equipment for the modernization of the Leyland plant. They will make their headquarters at the office of Morison, Pollexfen, Blair, Ltd., 115 Broad Street, New York.

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DR. W. S. CARNES, Canton, Ohio, president of the Car-Van Steel Products Co., spoke on "The Rediscovery of the Lost Art of the Old Damascus Sword Blade," at two luncheon clubs in Indianapolis recently.

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OSCAR ERICSSON, Copenhagen, Denmark, general European representative of the Heald Machine Co., Worcester, Mass., is on his way to the United States to attend the National Machine Tool Exposition in Cleveland.

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ERIK LINDHOLM, of the Aktiebolaget Servus, Stockholm, Sweden, will attend the National Machine Tool Exposition in Cleveland.

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C. SCHINZ, Schinz & Co., Zurich, Switzerland, European representatives of a number of American machine tool manufacturers, will arrive in New York this week and will stop at the Roosevelt Hotel. He will attend the National Machine Tool Exposition in Cleveland.

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CHARLES D. MOORE, formerly assistant open-hearth superintendent at the Johnstown Plant of the Bethlehem Steel Co., is now the superintendent of open-hearth at the Worth Steel Co., Claymont, Del.

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A. D. EVANS, formerly in charge of development work of the American Sheet & Tin Plate Co., Shenango Works, New Castle, Pa., has joined the Wean Engineering Co., Inc., as chief engineer and takes charge of development work and all engineering. The Wean company specializes in sheet and tin mill equipment, including pack heating furnaces, automatic tinning equipment, doublers and other labor-saving devices.

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J. B. HOLSTON has been appointed manager of the St. Louis sales office of the Wagner Electric Corporation. He was graduated from the University of Illinois and has been with the company in Chicago.

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WILLIAM H. INSLEY, president and general manager, Insley Mfg. Co., Indianapolis, fabricator of steel, has been selected by the Indianapolis city manager league to be one of its candidates for election as city commissioner.

ARTHUR L. WHITESIDE has been put in charge of an office opened at 30 Church Street, New York, by the Hill Clutch, Machine & Foundry Co., Cleveland.

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FRANK CARTER, former United States Government metallurgical inspector, has taken charge of the metallurgical department for James H. Knapp, industrial furnace manufacturer, Los Angeles.

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GEORGE S. DAVISON, president Davison Coke & Iron Co., Pittsburgh, has resigned as vice-president of the Gulf Oil Corporation and the Gulf Refining Co., Pittsburgh, to devote more time to the active management of the Davison company. On Oct. 10 he will leave for Japan, where he will act as one of the delegates of the American Society of Civil Engineers to the World's Engineering Congress.

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A. J. HENSELER has been appointed sales manager for the Whitney Metal Tool Co., Rockford, Ill.

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E. H. WHITTEMORE has been made manager of the newly opened Boston office of the Westinghouse Electric Elevator Co. at 10 High Street, a subsidiary of the Westinghouse Electric & Mfg. Co.

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W. A. FORBES, assistant to the president of the United States Steel Corporation, is sailing on the steamer Bremen, Sept. 12, for a two months' business trip in various industrial centers of Europe.

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Nitriding Expert to Speak at New York Meeting

A special joint meeting of the New Jersey and New York chapters of the American Society for Steel Treating has been arranged for Thursday evening, Sept. 19, at which Dr. Adolph Fry, of Krupp's, Essen, Germany, will be the speaker. He is one of the original developers of the new nitriding process for hardening steel.

The meeting will be held in the assembly room of the Merchants' Association, Woolworth Building, New York, and preceded by a dinner in the Post Keller Restaurant in the basement of that building.

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Ohio Founders at Toledo

The first sectional meeting of the Ohio Foundries Association, Inc., will be held at Toledo, Oct. 10. This will also be the annual meeting for the election of board members and the transaction of business. This sectional meeting will be held under the new schedule of four meetings a year, each to take place in a different part of the State.

A. H. Cohn & Sons, Butler, Pa., old material dealers, are constructing a yard at cost of $200,000, to handle iron and steel scrap.

Mileage Scale for Pig Iron in New England

Commerce Commission Examiner Recommends Distance Tariffs in Mystic Iron Works Case

WASHINGTON, Sept. 10.—Holding that rates on pig iron from the plant of the Mystic Iron Works, Everett, Mass., to points in New England are unreasonable, Examiner C. E. Simmons in a report made public last Saturday recommended that the Interstate Commerce Commission set up a distance scale applicable for joint line and single line rates.

The joint line rates would range from $1.85 a gross ton for 30 miles and under up to a maximum of $3.65 for 320 miles and over 280 miles. The single line rates would run from $1.65 to $3.45.

While pig iron is rated sixth class in Official Classification territory, the rates from the Mystic blast furnace range from 65 to 73 per cent of sixth class and in some instances carry a switching charge of $5 a car.

The examiner also recommended that the complainant be awarded reparation.

The report is interpreted as a victory for the Mystic furnace from the fact that the examiner held that the rates are unreasonable. The proposed scale, however, does not reduce rates to the level sought by the complainant. In this respect, it may be construed as being only a partial victory. Reference to present rates and the proposed scale shows that the latter would provide both decreased and increased rates. However, as the examiner said that the most important market for pig iron in New England is in Connecticut, the readjustment proposed would be favorable to the Mystic plant by bringing about reductions to important points in Connecticut along with other reductions.

The present rate from Everett to Hartford is $2.90 a ton, while the proposed single line rate would be $2.45 and the joint line rate $2.35. The rate to Waterbury and Bridgeport now is $3.20, while the proposed single line rate would be $2.65 and the joint line rate $2.85. Moreover, deliveries to Connecticut points carry a switching charge of $5 a car. To nearby points the proposed scale would carry slight increases and to some of the more distant points also it would carry increases. For example, the present rate of $2.65 to Rutland, Vt., would be increased to $2.85 for single line hauls and to $3.05 for joint line hauls.

The Hudson Valley Coke & Products Corporation, Troy, N. Y., intervened in the case and held that the present relationship in rates from Everett and Troy to the destinations involved, points in Massachusetts, Rhode Island, Connecticut, Maine, New Hampshire and Vermont should be continued and that any relief granted Everett, located in the Boston switching district, should also be reflected in the rates from Troy.

The Mystic furnace is served by the Boston & Albany and the Boston & Maine. Shipments destined to points on the New York, New Haven & Hartford are switched by connecting carriers to an interchange point in Boston with the New Haven. The furnace also is served by boat through Boston harbor.

The furnace receives no allowance out of line-haul rates for weighing, loading and unloading services, but the railroads absorb a loading charge of 60c. on imported pig iron shipped from Boston.

The complaint alleged that the Mystic furnace was unable to compete in New England with pig iron producers at Buffalo and Port Henry, N. Y., Erie, Hokendauqua, Reading, Bethlehem and Swedeland, Pa. The principal competition was said to come from Buffalo. From Buffalo the rate is $4.91 for distances ranging from 397 to 620 miles.

The examiner said that the Mystic plant has been compelled to seek markets at Baltimore, Philadelphia, Brooklyn and Jersey City. Shipments to the latter points, approximating 20 per cent of the complainant's output, were said to move by water. At present, the report said, the complainant has a large quantity of pig iron on hand which it is unable to sell. The cost of assembling raw materials at Everett was shown to be materially higher than that of its competitors, according to the report. The greater portion of the raw materials received at Everett, it was pointed out, is obtained from distant points while the raw materials of competitors are received from points nearer and more adjacent to their plants.

Bethlehem to Issue 800,000 New Shares of Common

E. G. Grace, president, Bethlehem Steel Corporation, announced on Tuesday (Sept. 10) that the directors had authorized the issuance of 800,000 new shares of common stock in the ratio of one share for each three shares held on Sept. 20. The price of the new shares is to be $110.

Funds derived from the sale of these shares, amounting to $88,000,000, will be used for the retirement of bonds. It is the corporation's intention to call for redemption on the next interest date, Feb. 1, 1930, all of its consolidated mortgage 30-year sinking fund 6 per cent gold bonds, series A. At 105, the callable price, and accrued interest this will require $50,166,000. The remainder will be used to retire or purchase other funded obligations of the corporation or its subsidiary companies.

New common stock will be issued as of Oct. 21, and will be entitled to share in dividends payable after Nov. 15. The increase will raise the number of common shares to 3,200,000. A few months ago Bethlehem issued 600,000 new shares, an increase from 1,800,000 to 2,400,000.

President Grace in an oral statement said that Bethlehem, in common with other steel companies, had experienced a falling off in new business in August, but that it was not serious and that operations are being continued at 95 per cent. He expected that output would remain on this basis throughout the month. He looked for increased buying, particularly from the railroads. Much of Bethlehem's high rate of operation is due, it was said, to heavy orders for structural material and plates, and it also has a good rail backlog. Mr. Grace was optimistic as to fall business prospects.

Obituary

ROSWELL M. BOUTWELL, treasurer Standard Horseshoe Co., Boston, died Sept. 4 at a private hospital in Brookline, Mass. He was born in Lyndeboro, N. H., May 22, 1855. He served as president of the New England Iron & Hardware Association and was a director of that organization for approximately 20 years.

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JOHN DAVID HURLEY, president and founder of the Independent Pneumatic Tool Co., who died suddenly Aug. 15, as mentioned in this column Aug. 22, organized, about 1898, with his brother Edward N. Hurley, Sr., the Standard Pneumatic Tool Co., which was one of the first concerns to introduce air tools in railroad shops and other industries. On March 1, 1902, this company was absorbed by the Schwab interests and Mr. Hurley became identified with the Rand Drill Co., of New York. In 1905 he returned to Chicago and organized the Independent Pneumatic Tool Co.

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WALTER CLARK FISH, former manager of the Lynn, Mass., works of the General Electric Co., died Sept. 8 at his home in Boston. He was born at Taunton, Mass., Aug. 25, 1864, studied two years at Harvard University, and was graduated from Massachusetts Institute of Technology in 1887.

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JOHN S. WOOLFORD, president G. Woolford Wood Tank Mfg. Co., Philadelphia, died at his country home, Newfield, N. J., Sept. 7, in his eighty-sixth year, after a brief illness. Upon the death of his older brother, George Woolford, in 1911, he was elected president of the company, and has been its active head since that time.

Automobiles "junked" in the United States in 1928 numbered 2,213,000, according to the American Motorists' Association, Washington. As domestic sales are reported at 3,220,000, it follows that the net increase in consumers' hands was 1,007,000.

Some Improvement in European Markets

British Mills Active—Tin Plate Prices Firm—Pig Iron Demand Better—American Purchases of Manganese Ore from Russia

(*By Cable*)

LONDON, ENGLAND, Sept. 9.

CLEVELAND pig iron demand has improved, but furnaces are as yet unable to accept new orders for prompt shipment. Coke prices are firmer and supplies continue limited, so that further increase in the number of active blast furnaces seems improbable.

Hematite producers are asking increased prices, but consumers, especially those overseas, are not hastening to commit themselves beyond immediate needs.

Inquiry for finished steel is fair in the domestic and export markets, and mills expect to reap the benefit of active conditions prevailing on the North East coast. Most shape mills are fully employed, and plate mills are generally moderately busy.

British users of Continental sheet bars are displaying increased interest in buying, and with demand good prices have been advanced and may go higher. The market is otherwise dull.

Tin plate prices are firm with costs increasing and inquiry good, although actual business is not yet brisk. Several works sold well ahead prior to the latest price advance and now are not pressing for orders.

Galvanized sheets are in moderate demand, especially for South Africa, but India is still quiet, although demand from that market is expected to revive before the end of the current month. Black sheets continue quiet.

The British Government is setting up a committee under Lord Weir to examine the economic and other aspects of electrification of British railroads.

British Steel Mills Are Still Busy

Inquiry Increasing—Employment Smaller in Steel Plants But Better at Blast Furnaces—Ship Workers Strike

LONDON, ENGLAND, Aug. 29.—A favorable feature of the market is the fact that certain iron and steel plants in the Cleveland district have been so busy that they have operated through the usual vacation week. Cleveland pig iron for prompt delivery is still scarce, but there is not much difficulty in securing supplies for future shipment. Meanwhile arrivals of Indian pig iron have been increasing and further shipments are expected.

Employment at blast furnaces improved in July, returns from 79 companies showing an increase of 1.3 per cent compared with June and 16.8 per cent compared with July, 1928. The number of furnaces in blast at the end of July was 167, compared with 165 at the end of June and 131 at the end of July, 1928. In steel mills, employment decreased 0.4 per cent in July, but was 5.6 per cent better than in July of last year.

While the steel industry has been experiencing a period of quiet, some branches of it are feeling an increase in inquiry, which may be the beginning of a fall buying movement. British manufacturers of railroad rolling stock have recently secured good contracts from Argentina, Peru, Rhodesia and India.

Although shipbuilding is not satisfactory, a number of orders for vessels have been and are being placed. Among recent contracts are an 8000-ton cargo ship awarded to Palmers Shipbuilding & Iron Co., Ltd., and a 9000-ton, motor-driven tank vessel placed with Swan, Hunter & Wigham Richardson, Ltd. At Belfast, shipyard joiners have been on strike for 19 weeks for a wage increase of 3s. (73c.) a week. More than 1000 joiners are affected by the strike, and a number of other employees have been thrown out of work in consequence.

British and Continental European Export prices per gross ton, f.o.b. United Kingdom Ports, Hamburg and Antwerp with the £ at $4.85

British Prices, f.o.b. United Kingdom Ports

Cleveland No. 3 foundry	£3	12½s.	to	£3	13½s.	$17.58	to	$17.82
East Coast Hematite	3	16	to	3	16½	18.39	to	18.51
Ferromanganese, export	13	10	to	14	0	65.47	to	67.90
Billets, open-hearth	6	7½	to	6	10	30.92	to	31.52
Sheets bars, open-hearth	6	5	to	6	10	30.31	to	31.52
Black sheets, Japanese specifications	13	0				63.05		
Tin plate, per base box	0	18½	to	0	18¾	4.48	to	4.54
Rails, 60 lb. and heavier	7	15	to	8	15	37.59	to	42.43
						Cents per Lb.		
Steel bars, open-hearth	7	15	to	8	10	1.67	to	1.84
Beams, open-hearth	7	2½	to	7	12½	1.55	to	1.65
Channels, open-hearth	7	7½	to	7	17½	1.60	to	1.71
Angles, open-hearth	8	2½	to	8	12½	1.76	to	1.86
Ship plates, open-hearth	7	12½	to	8	2½	1.66	to	1.76
Black sheets, No. 24 gage	10	5	to	10	10	2.21	to	2.27
Galvanized sheets, No. 24 gage	13	7½	to	13	10	2.89	to	2.92

Continental Prices f.o.b. Antwerp or Hamburg

Foundry iron, 2.50 to 3.00 per cent sil., 0.50 to 0.90 per cent phos.	£3	8s.	to	£3	11½s.	$16.49	to	$17.33
Foundry iron, 2.50 to 3.00 per cent sil. 1.00 per cent and more phos.	3	11				17.21		
Billets, Thomas	4	14				22.79		
Sheet bars, Thomas	4	16	to	4	18	23.28	to	23.76
Wire rods low C., No. 5 B.W.G.	6	5	to	6	6¼	30.30	to	30.61
Black sheets, No. 31 gage, Japanese	12	7½				60.02		
Rails, 60 lb. and heavier	6	10*				31.52		
Rails, light	6	1½				29.46		
						Cents per Lb.		
Steel bars, merchant	5	12	to	5	13½	1.21	to	1.23
Steel bars, deformed	5	11½	to	5	12	1.20	to	1.21
Beams, Thomas, British standard	5	2	to	5	6½	1.12	to	1.17
Channels, Thomas, American sections	5	14	to	5	18	1.24	to	1.27
Angles, Thomas, 4-in. and larger, over ⅜-in. thick	5	6				1.16		
Angles, Thomas, 3-in.	5	13½				1.23		
Ship plates, open-hearth inspected	7	8				1.63		
Hoop and strip steel over 6-in. base	5	15	to	5	16	1.24	to	1.27
Wire, plain, No. 8 gage	7	7				1.62		
Wire, galvanized, No. 8 gage	9	7½				2.03		
Wire, barbed, 4-pt. No. 12 B.W.G.	11	12½				2.58		
Wire nails, base	7	10½				$1.63 per keg		
Wire nails, assortments, 1 to 6-in., keg	10	6½				2.23		

*Open-hearth steel, 10s. ($2.42) per ton extra.

Welded Merchant Ship to Be Launched Next Year

HAMBURG, GERMANY, Aug. 26.—Electrically welded ships are officially recognized as in the highest registered class by the Germanische Lloyd in its publication No. 556-1-1929. The Hamburg agency of Lloyds of London confirms the report that they also place electrically welded ships in the highest registry. German insurance companies generally have taken similar action.

In addition to the electrically welded German battleship, Panzerkreuzer A, now under construction at Kiel, a merchant vessel is being electric-welded and will be launched by Deschimag at Hamburg in January or February of next year. Built for the North German Lloyd line, this ship of 11,000 tons will be in the company's river name class, with such vessels as the Isar and the Elbe, and is expected to be operated in the Far Eastern trade.

German Industry Opposes Shipping Subsidy

HAMBURG, GERMANY, Aug. 26.—The German hardware industry has followed the example of steel and machinery producers in definitely denying that it has in any way recommended that the Government pay subsidies to industry. The entire metal industry in Germany has declared that "subventions paid directly or indirectly to shipping or shipbuilding enterprises must be refused" and points to the examples of Canada, Australia and England, where, it is claimed, the State suffers loss and the industry no advantage.

Polish Government Buys Cars

WARSAW, POLAND, Aug. 26.—The Government has placed a large order for railroad rolling stock with Polish builders, which will doubtless result in a considerable curtailment of the export expansion program of the industry. The contract includes 140 locomotives, 170 passenger, 1800 freight and 300 miscellaneous cars, and 80,000 tons of rails and track equipment.

Active Automobile Parts Exports to Germany

HAMBURG, GERMANY, Aug. 19.—An analysis of the imports of steel from the United States shows that the largest volume is in parts and accessories for automobile manufacture, shipped by American motor car builders to their German assembling plants. In the first half of this year, 84.6 per cent of the total imports from the United States was parts and accessories, 2.8 per cent special steels not intended for use in motor car construction, 2.9 per cent black and galvanized sheets, 3.1 per cent tin plate, 3.1 per cent accessories and parts used in machinery building and 3.5 per cent all other steel products. German exports to the United States consisted principally of tubes, hoops and wire.

Acid Open-Hearth Output Lower

HAMBURG, GERMANY, Aug. 26.—While the production of basic open-hearth steel is steadily increasing in Germany, output of acid open-hearth is rapidly diminishing. Of the record post-war production of steel in July, which reached a total of 1,466,072 metric tons, 740,893 tons was basic open-hearth steel. The output of acid open-hearth steel has declined from 22,871 tons in July, 1928, to 13,005 tons in July, 1929.

European Lock Cartel in Prospect

HAMBURG, GERMANY, Aug. 26.—Following the Yale & Towne Mfg. Co.'s acquisition of one of the largest British manufacturers of locks, it is reported that two more German lock manufacturers are negotiating with the American company. It is understood that British and German manufacturers will confer with officers of the American corporation at Berlin, Oct. 25, and it is expected that the meeting will result in the establishment of a closely controlled cartel or a merger of all companies into a single corporation. At its Velbert plant the Yale & Towne company is now employing about 10,000 workmen.

Germans Control Foreign Mannesmann Works

HAMBURG, GERMANY, Aug. 26.—The Mannesmann Tube Co., which recently acquired a heavy interest in the British Mannesmann Tube Works, now owns about £1,444,000 ($7,003,400) of the British company's £2,000,000 ($9,700,000) capital, about 65 per cent of the stock in the French company, Acieries et Usines de la Saar, and about 90 per cent of the stock of the Mannesmann works in Czechoslovakia.

To Stock Steel at Shanghai

HAMBURG, GERMANY, Aug. 19.—Steel exporters are endeavoring to organize the trade with China in plate cuttings, bar crop ends and other forms of second-hand steel. Thus far only moderate quantities of such material have been supplied to China by Germany, but exporters expect to establish permanent stocks in Shanghai.

Higher Rates to Africa

HAMBURG, GERMANY, Aug. 26.—Ocean freight rates on practically all hardware products from Continental ports to South Africa, which have been low in the past, in some instances only 10s. ($2.42) per ton, have been increased 200 to 300 per cent. Exporters to South Africa are pessimistic and believe that the higher rates will mean considerable loss of business to American and Japanese hardware manufacturers, especially to the Japanese, who have been unusually active lately in pressing for larger markets.

Steel Corporation Purchases Russian Manganese Ore

An Associated Press cablegram from Tiflis gives the following statement, evidently based on information from official sources there, concerning the United States Steel Corporation's recent purchase of manganese ore to be mined in the Chiatouri district and shipped from the port of Batum:

"The Georgian Government manganese trust today signed an agreement with the Carnegie Steel Co. for delivery from Chiatouri of large quantities of manganese over a period of five years. During the first year the Carnegie company will take from 60,000 to 75,000 tons of ore and, during the remaining four years, 50,000 tons annually. It was stated that the Carnegie company bought its manganese to improve Brazilian manganese, which it obtains from its own mines. The Georgian Government is continuing negotiations for the sale of quantities of ore to other large American corporations."

British May Make "Widia"

HAMBURG, GERMANY, Aug. 26.—The Friedrich Krupp A. G., Essen, is understood to have entered into negotiations with Sheffield producers of special steels to license one or more for the production of "Widia" cutting metal.

Mail from Japan in 9 Days

A letter mailed by B. P. Sweeny of Osaka, representative in Japan of the Cleveland Twist Drill Co., for transmission by the Graf Zeppelin, reached the Cleveland office in nine days. Even this might have been shortened by at least one day, for if the Graf had been a regular mail carrier, in all probability it would have dropped the Cleveland mail as it passed over that city.

As mail from Japan reaches Cleveland under ordinary circumstances in approximately four weeks, the experience indicates the startling possibilities of the airship of the Zeppelin type as a mail carrier.

Plans for the immediate construction of a new mineral industries building at the Pennsylvania State College have been announced by President Ralph D. Hetzel and Edward Steidle, dean of the School of Mines and Metallurgy. Two hundred feet in length, the building will have wings at both ends, 135 ft. deep. The four floors will contain laboratories, classrooms and offices to care for all instruction and research work in geology, mineralogy, geography, oil and gas production, mining, quarrying, metallurgy and ceramics, or clay and sand products.

Machinery Markets and News of the Works

Tool Market Remains Active

Large Order Placed for Delivery to Russia—Sales in New York District Surprisingly Good

DESPITE the tendency of some machine tool users to hold off action on pending inquiries until after the Cleveland exposition, sales have been fairly well sustained.

An Eastern seller reports that its volume of business in August was the largest of the year and other companies state that the past month compares favorably wth the best previous months of 1929. Moreover, orders in the New York district are continuing to come in steadily and the amount of buying in prospect indicates that September totals will be high.

This unusually favorable condition, however, does not exist in some other machine tool centers, although the flow of orders has been satisfactory.

A Connecticut airplane maker has added $80,000 worth of tools to previous purchases. The Western Electric Co. has placed some sizable orders and the Continental Motors Corporation has been an active buyer. The International Harvester Co. still has some standard tools to purchase for its Farmall plant.

The Amtorg Trading Corporation has contracted for 50 lathes with two American builders and is inquiring for a like number of automatic screw machines for an automobile plant to be built in Soviet Russia. This organization also is ordering equipment for a tractor manufacturing plant to be erected near Leningrad. A Cleveland maker of automatic screw machines has sold six machines for delivery to a Japanese arsenal.

New York

NEW YORK, Sept. 10.—A leading Eastern seller of machine tools did the largest business in August of any month this year. While this record was exceptional, other machine tool sellers also did a large volume, and the month as a whole in this district compared favorably with the best previous peak months. Orders so far this month, although affected slightly by the Labor Day holidays last week, are coming in steadily, and the amount of buying in prospect indicates that September totals will be high. The Western Electric Co. is one of the principal buyers. Orders are being placed by the Amtorg Trading Corporation, 165 Broadway, New York, for a new tractor manufacturing plant in Soviet Russia.

Board of Education, Flatbush Avenue Extension and Concord Street, Brooklyn, and Park Avenue and Fifty-ninth Street, New York, will soon take bids for an eight-story technical high school for boys at Fort Greene Place and DeKalb Avenue, Brooklyn, to cost about $5,500,000. W. C. Martin, address first noted, is architect.

Westinghouse Lamp Works, Inc., Bloomfield, N. J., subsidiary of Westinghouse Electric & Mfg. Co., 150 Broadway, New York, has work under way on five-story addition, 80 x 200 ft., with L-extension, 60 x 175 ft., to be equipped as a wire products plant, to cost about $700,000 with equipment.

New York & Queens Electric Co., 40 Lawrence Street, Flushing, L. I., has awarded general contract to Stamarith Construction Corporation, 444 Jackson Avenue, Long Island City, for one-story automobile service, repair and garage building at Elmhurst, L. I., for company motor trucks and cars, to cost about $100,000 with equipment.

Anaconda Wire & Cable Co., operated by Anaconda Copper Mining Co., 25 Broadway, New York, has acquired Marion Insulated Wire & Rubber Co., Marion, Ind., and will consolidate with organization. Marion plant will be developed for increased capacity as Middle West unit.

Board of Public Works, Mount Vernon, N. Y., has filed plans for a municipal automobile service, repair and garage building, to cost $105,000 with equipment.

Port of New York Authority, 75 West Street, New York, has plans for fourteen-story central freight terminal, 200 x 800 ft., in West Side district, for which site is being acquired, to include elevating, conveying and other mechanical-handling equipment, entire project to cost $9,000,000.

Eagle Bronze Works, Inc., North Bleecker Street, Mount Vernon, N. Y., has work under way on expansion at three-story plant, to cost about $60,000. George M. Bartlett, 103 Park Avenue, New York, is architect.

C. B. Meyers, 31 Union Square, New York, architect, will take bids on general contract for one-story automobile service, repair and garage building, to cost $170,000 with equipment.

Truscon Steel Co., 31 Union Square, New York, with main plant at Youngstown, has work under way on a factory branch, storage and distributing plant at Harrison, N. J., where 3-acre tract recently was acquired, to cost $100,000 with equipment. Charles D. Loveland, formerly manager of company at Pittsburgh, will be district manager of northern New Jersey, with headquarters at Newark.

Schnell Penselpen Corporation, 11 Franklin Street, New York, manufacturer of combination metal pencils and pens, has begun construction of first unit of new plant, 75 x 125 ft., at Arlington, N. J., to cost about $50,000. Present factory will be removed to new location and capacity increased.

Officials of Schultz Machine Co., Inc., Hoboken, N. J., have organized Radio Products Corporation, with capital of 200,000 shares of stock, no par value, to take over and expand Vacuum Tube Products, Inc., 219 Bloomfield Street, Hoboken, heretofore operated as an interest of Schultz company. New organization will also take over and occupy a three-story plant at 548-52 South Eleventh Street, Newark, N. J., equipped for production of radio tube parts, high-testing vacuum gages and other precision apparatus. Company has arranged for sale of block of common stock to total $1,825,000, to be used in part for expansion. Frank Schultz is president; D. R. Donovan is vice-president.

Transit Mixed Concrete Co., Hanover Avenue, Morris Plains, N. J., has plans for a central proportioning and distributing plant for concrete production, to operate under automatic mechanical system for loading motor trucks, etc., these to be equipped to mix material while en route to point of delivery. Initial plant will cost more than $50,000 with equipment.

Following completion of one-story addition now under way, to total about 13,725 sq. ft. of floor space, Otis Elevator Co., Harrison, N. J., plans removal of plant of Graham & Norton Co., 126 Eleventh Avenue, New York, manufacturer of elevator door devices and accessories, to this location, with installation of additional equipment. Graham & Norton organization was recently acquired and is now operated as a division of Otis company, which is developing Harrison works as self-contained unit for production of complete elevator cars and accessories. C. C. Campbell is manager of plant. Headquarters are at Eleventh Avenue and Twenty-sixth Street, New York.

Alfred Hofmann, Inc., 635 Fifteenth Street, West New York, N. J., manufac-

turer of knitting machinery for hosiery mills, electric lamp machinery, etc., has awarded general contract to Auf Der Heide Contracting Co., 443 Sixteenth Street, West New York, for two-story addition, 100 x 125 ft., to cost about $75,000 with equipment. Lockwood Greene Engineers, Inc., 1 Pershing Square, New York, is architect and engineer.

Philadelphia

PHILADELPHIA, Sept. 9.—Contract has been let by Schuch Machine Co., 235 New Street, Philadelphia, to Adolph Korn, 1420 Walnut Street, for two-story plant unit, 50 x 150 ft., to cost about $45,000 with equipment. Charles E. Oelschlager, 1615 Walnut Street, is architect. C. F. Schuch is head.

Woodward-Wanger Co., 1106 Spring Garden Street, Philadelphia, plumbing equipment and supplies, has filed plans for addition for storage and distributing service, with pipe department, etc., to cost $45,000 with equipment. It will replace structure destroyed by fire a few months ago. F. B. Davis & Son, Inc., 240 North Sixteenth Street, is general contractor.

Gulf Refining Co., Sydenham and Locust Streets, Philadelphia, with main offices at Pittsburgh, has awarded general contract to Cramp & Co., Denkla Building, for group of buildings at Girard Point, comprising four-story unit, 48 x 112 ft.; one-story, 40 x 83 ft., 39 x 42 ft., and 32 x 63 ft., entire project to cost more than $100,000 with equipment. Edward B. Lee, Chamber of Commerce Building, Pittsburgh, is architect.

Ballinger Co., 105 South Twelfth Street, Philadelphia, architect and engineer, has plans for three-story baking plant to include traveling ovens, power equipment, conveying machinery and other equipment, entire project to cost about $500,000.

National Umbrella Frame Co., Belfield Avenue, Philadelphia, has awarded contract to George H. Whitner, 403 East Penn Street, for second story addition and improvements in existing building.

Farman Aircraft Corporation, Philadelphia, care of N. S. Ludington, 123 South Broad Street, has awarded contract to Airport Development & Construction Co., Mitten Building, for three-story plant at Camden, N. J., for parts and assembling service, to cost more than $100,000 with equipment.

William M. Stanton, Land Title Building, Philadelphia, architect, has plans for five-story automobile service, repair and garage building at Atlantic City, N. J., to cost about $200,000 with equipment.

Abraham Shapiro, Hotel Jermyn, Scranton, Pa., and associates have organized United States Textile Machine Co., with capital of $25,000, and plan operation of local plant to manufacture machinery for silk and cotton mills. R. C. Shepherd and A. W. Thomas, both of Scranton, are interested in new company.

Board of Education, Mechanicsburg, Pa., plans installation of manual training equipment in addition to high school, to cost $180,000, for which bids have been asked on general contract. C. J. Lappley, Front and Harris Streets, Harrisburg, Pa., is architect.

Individual Drinking Cup Co., Easton, Pa., manufacturer of pressed paper drinking cups, etc., has awarded general contract to R. T. & C. D. Stewart, Easton, for three-story addition, 80 x 100 ft., to cost about $100,000 with equipment. Ballinger Co., Philadelphia, is architect and engineer.

Capital Landing Field Co., Harrisburg, Pa., recently organized by Frank A. Robbins, Jr., Daniel N. Casey and other officials of Harrisburg Chamber of Commerce, has plans by Austin Co., Cleveland, for airport on Harrisburg-York Highway, about 5 miles from city, to include hangar, 100 x 120 ft., machine and repair shops, oil storage and other units, to cost more than $100,000 with equipment.

New England

BOSTON, Sept. 9.— Buying by a Connecticut manufacturer of aircraft since Sept. 3 has enlivened an otherwise quiet machine tool market. Purchases included $50,000 worth of equipment from one local dealer and about $30,000 worth from other Boston firms, for delivery during the first quarter of 1930.

Considerable used equipment was sold the past week. Sales unquestionably would be larger if dealers had equipment wanted. Good used tools, in some instances, bring higher prices than during the war.

Small tool makers are booked ahead for the remainder of 1929, and well into the first quarter of 1930 on certain types of tools.

Hawie Mfg. Co., 729 Washington Avenue, Bridgeport, Conn., is building a two-story addition, 50 x 89 ft., and making plant alterations. Motors and other equipment will be needed.

Heil Co., Milwaukee, manufacturer of automobile bodies, has closed bids on a group of plant units to be erected at Cambridge, Mass., including a warehouse calling for a three-ton overhead traveling crane.

West Springfield, Mass., contemplates a one-story pumping station, 30 x 46 ft., for its Bear Hole reservoir, to cost $10,000 without equipment.

Lee Electric Co., Lee, Mass., has purchased Thistle Wire Works Co. local property, and plans mechanical improvements.

L. G. Balfour Co., County Street., Attleboro, Mass., has plans for a three-story, 40 x 350 ft. and one-story, 40 x 60 ft. jewelry manufacturing plant and a power plant, to cost $200,000 with equipment.

M. J. Whittall Associates, Worcester, Mass., have awarded contract to Morton C. Tuttle Co., Boston, for power house, 80 x 110 ft., to contain four boilers. Estimated cost is $200,000. Francis J. Sill, Westboro, Mass., is consulting engineer.

Virginius J. Mayo, New Haven, Conn., formerly president of Mayo Radiator Co., with local plant for manufacture of automobile radiators, is at head of project to erect a plant to manufacture metal airplanes and seaplanes, including parts and assembling departments, under a special metal process perfected by Mr. Mayo. Plant is reported to cost more than $75,000.

Providence Insulated Wire Co., 65 Wadsworth Street, Providence, has awarded general contract to Henry M. Soule, 110 Brook Street, Pawtucket, R. I., for two-story addition, 40 x 72 ft., to cost about $25,000 with equipment.

Curtis Flying Service, Inc., Boston, has filed plans for hangar with repair and reconditioning shop facilities at 9 Airport Road North, to cost about $65,000 with equipment. Headquarters are at 27-29 West Fifty-seventh Street, New York.

Almac Yacht Corporation, Mystic, Conn., is planning one-story shop, 50 x 150 ft., at Pistol Point, to cost about $35,000 with equipment.

Simplex Wire & Cable Co., 201 Devonshire Street, Boston, has awarded general contract to Chase & Gilbert, Park Square Building, for extensions in plant at Cambridge, to cost about $50,000.

Noma Electric Corporation, 340 Hudson Street, New York, manufacturer of radio tubes and equipment, has purchased plant of Everett Mills, Inc., Lawrence, Mass., totaling 1,500,000 sq. ft. floor space. Purchasing company will take possession soon and will concentrate production here, including manufacturing of its subsidiary, Pilot Radio & Tube Co., removing plants now at New York, Brooklyn, Poughkeepsie and Buffalo; Newark, N. J.; and Detroit, to new location. Joseph Block is president of Noma company.

Pease & Curran, 104 Point Street, Providence, operating a fine metals refining plant, have awarded a general contract to Charles B. Maguire Co., 507 Grosvenor Street, for one-story addition, 55 x 100 ft., to cost about $35,000 with equipment. Francis Chiaverini, 32 Broadway, is architect.

South Atlantic

BALTIMORE, Sept. 9.—Bids will soon be asked by Public Improvement Commission, City Hall, Baltimore, for addition to polytechnic high school, to cost about $1,000,000 with equipment. Charles M. Anderson, 9 East Pleasant Street, is architect; Henry Adams, Calvert Building, is mechanical engineer.

Firestone Tire & Rubber Co., Akron, Ohio, has plans for a three-story factory branch, storage and distributing plant, 85 x 230 ft., at Baltimore, to cost about $200,000 with equipment.

Simpson & Morgan Ice & Coal Co., Rockmart, Ga., is planning one-story, electrically-operated ice-manufacturing plant, to cost about $50,000 with equipment.

Sonoco Products Co., Hartsville, S. C., manufacturer of cones and other paper products, has awarded general contract to A. K. Adams Co., 542 Plum Street, N. W., for three-story and basement addition, to cost about $75,000 with equipment.

American Manganese Fertilizer Corporation, care of Albert S. Dulin, 1422 F Street, N. W., Washington, recently formed by Mr. Dulin and associates with capital of $500,000, is said to have plans for new plant near Alexander, Va., to cost more than $150,000 with equipment.

Georgia Power Co., Atlanta, Ga., has preliminary work in progress on new steam-operated electric power plant on Chattahoochee River, about 15 miles from city. Station will be equipped for initial output of 100,000 hp., and will cost more than $2,000,000 with transmission lines. Later, three additional units will be provided, making total rating of 400,000 hp. for project.

Officials of Certain-Teed Products Corporation, 100 East Forty-second Street, New York, manufacturer of roofing, paperboard products, etc., are organizing Southern Building Products Corporation, Savannah, Ga., represented by Remer L. Denmark, Savannah Fire Insurance Building, to construct local plant for manufacture of roofing products and other building specialties. Parent company recently acquired local site. Project will cost more than $80,000.

County Aviation Committee, County Supervisors, Wilmington, N. C., has plans for new buildings at Bluementhal air-

port, including hangars, repair and reconditioning shops, oil storage and other units, to cost more than $70,000 with equipment. Louis L. Merritt is designer, in charge of project.

Home Service Co., 3 Page Avenue, Asheville, N. C., D. D. Smith, president, is considering installation of steam power plant for central heating service in business district, to cost more than $500,000 including distributing system.

Detroit

DETROIT, Sept. 9.—Bids will soon be asked by Hayes Body Corporation, Seventh Street, N. W., Grand Rapids, Mich., manufacturer of automobile bodies, for a three-story addition to cost over $70,000 with equipment. A. A. Anderson is secretary and treasurer.

Hancock Iron Works, Inc., Pontiac, Mich., has asked bids on general contract for a one-story plant unit, to cost about $40,000 with equipment. Robert O. Derrick, Inc., Union Trust Building, Detroit, is architect.

Detroit Aircraft Corporation, Detroit, has taken title to 30-acre tract at Long Beach, Cal., for a new plant for parts production and assembling, to cost over $100,000 with equipment.

Wayne County Board of Supervisors, Barium Tower Building, Cadillac Square, Detroit, is planning construction of power house at County airport, to cost over $85,000 with equipment. Giffels & Vallet, Marquette Building, are engineers.

Venton Steel Sash Co., Sixth Street, Muskegon, Mich., is contemplating a one-story addition, 50 x 130 ft., to cost about $65,000 with equipment.

Clark Equipment Co., Dewey Street, Buchanan, Mich., manufacturer of automotive parts and equipment, has secured additional interest in Frost Gear & Forge Co., Jackson, Mich., with holdings totaling 90 per cent of outstanding stock, and expects to secure complete ownership for a wholly controlled subsidiary. Expansion is planned, including one-story addition at Buchanan to cost over $50,000, for which plans will be drawn by F. L. Shoemaker, Masonic Block, Sturgis, Mich., architect.

Central Machine Co., 6320 East Fort Street, Detroit, has awarded general contract to Stibbard Construction Co., 3000 Grand River Boulevard, for two-story addition to machine shop, 60 x 100 ft., to cost about $45,000 with equipment.

Paper Makers' Chemical Corporation, Kalamazoo, Mich., manufacturer of industrial chemicals, has selected 7-acre tract in Guilds Lake district, Portland, Ore., as site for new branch plant, to cost about $275,000 with equipment. Plans will be drawn at once.

Midland Steel Products Co., 6660 Mount Elliott Avenue, Detroit, has awarded general contract to Wisconsin Bridge & Iron Co., Penobscot Building, for one-story addition for storage and distribution, to cost $60,000. Company is planning to develop large increase in output of four-wheel brakes for automobiles at local plant. Main offices are at Cleveland.

Monroe Auto Equipment Co., Monroe, Mich., has perfected a two-way hydraulic shock absorber for automobile service and is planning plant expansion to develop large output of new specialty. Production of one-way shock absorber will continue as heretofore, on basis of about 50,000 sets per month.

The Crane Market

SALES of overhead traveling cranes have not been large in the past week, but there is a substantial volume of inqury. In the New York district a single order for overhead cranes placed last week totaled about $100,000. The United Dry Docks, Inc., Port Richmond, S. I., New York, is inquiring for a number of overhead cranes. The Wood Newspaper Machine Corporation, Plainfield, N. J., has closed on several small cranes. The New York Central Railroad is reported to have closed on a used locomotive crane with a dealer and is still in the market for two 25-ton locomotive cranes and a 20-ton, 40-ft. span stationary gantry crane.

Among recent purchases are:

Buda Co., Harvey, Ill., 7½-ton, 60-ft. span electric traveling crane from unnamed builder.

Pittsburgh

PITTSBURGH, Sept. 9.—Machine tool buying so far this month has not been in large volume and local dealers expect a rather quiet month pending the machine tool show the first week in October. Considerable interest in the proposed exhibits is being manifested in this district and important buying is expected. Several small orders have recently been placed, but no new lists of consequence have come out the past few days. A considerable number of tools is still pending.

The Westinghouse Electric & Mfg. Co. has practically completed purchases against its third quarter requirements. The United States Aluminum Co., New Kensington, Pa., has not yet placed any tools for its new machine shop, but is understood to have come to decisions on the majority of equipment, with awards expected to be made soon.

Contract has been let by Standard Steel Specialty Co., Beaver Falls, Pa., manufacturer of machine keys and kindred products, to Penn Bridge Co., College Hill, Pa., for one-story addition, 60 x 120 ft., to West Mayfield plant, to cost $75,000 with equipment.

United Aircraft & Transport Corporation, operating Standard Steel Propeller Corporation, 221 West Seventh Avenue, Pittsburgh, and other organizations, has acquired plant and business of Hamilton Aero Mfg. Co., Keefe Avenue, Milwaukee, manufacturer of steel propellers and other aircraft equipment, and will operate as a division of Standard company.

E. J. Henggi, 138 View Street, Oakmont, Pa., and associates have organized Henggi Rail Appliance Co., to establish plant for manufacture of railroad equipment and appliances. D. S. Thomas, 117 Lexington Street, Aspinwall, Pa., will be an official of new company.

Champion Switch Co., Kenova, W. Va., manufacturer of electric switches and equipment, has plans for one-story addition, to cost about $30,000 with equipment.

Airways & Aircraft Co., Farmers' Bank Building, Pittsburgh, has plans for airport development at Dravosburg, Pa., including hangars and other mechanical field units, to cost more than $85,000 with equipment. Kenneth Franzheim, 345 Madison Avenue, New York, is architect; Stone & Webster Engineering Co., Union Trust Building, Pittsburgh, is engineer.

Board of Education, Donora, Pa., is contemplating installation of manual training equipment in two-story high school to cost about $275,000, for which bids have been asked on general contract. C. C. Compton, Thompson Avenue and Fourth Street, is architect.

Cleveland

CLEVELAND, Sept. 9.—Local machine tool dealers report light sales the past week and a falling off in inquiry. Some prospective business is being held back until after the National Machine Tool Builders' Exposition in Cleveland. Business with builders of turret lathes and automatic machines is holding close to recent volume. A local manufacturer of automatic screw machines is now promising next spring delivery on some sizes. This company took an order the past week for six machines for the Japanese arsenal.

Export demand continues good for turret lathes. The Amtorg Trading Corporation is understood to have placed an order for about 50 lathes with two American machine tool manufacturers and is about to purchase a like number of automatic screw machines for an automobile plant to be built by the Soviet Government at Nishni Novgorod, Russia. This business has been pending for some time. Another Russian automotive project requiring a large amount of machinery will be a truck manufacturing plant to be built at Leningrad. It is stated that this project is being handled by the Brandt Co., engineer, Detroit.

Globe Steel Barrel Co., Cleveland, which recently acquired former Cleveland Railway power house on Washington Avenue, N. W., will remodel building and add considerable equipment to manufacture steel drums, barrels and other containers.

Toledo Steel Products Co., Toledo, Ohio, manufacturer of automobile valves, has purchased a controlling interest in Fostoria Screw Co., Fostoria, Ohio, manufacturer of bolts and bushings. It is stated that both plants will be operated as separate units but sales organizations will be combined.

Elyria Mfg. Corporation, Elyria, Ohio, maker of screw machine products, has enlarged its plant by a one-story addition, 50 x 120 ft.

Lindsay Wire Weaving Co., 14025 Aspinwall Avenue, Cleveland, has awarded general contract to J. E. Christian Co., 1307 St. Clair Avenue, for two-story addition, 50 x 120 ft., to cost about $65,000 with equipment. Bohnard & Parson, Euclid Building, are architects.

Eaton Axle & Spring Co., East Sixty-fifth Street, Cleveland, has awarded general contract to H. K. Building Co., 1319 West 103rd. Street, for one-story assembling unit to cost over $70,000 with equipment. George S. Rider Co., Century Building, is architect and engineer.

Briggs Mfg. Co., 12825 Taft Avenue, Cleveland, manufacturer of automobile bodies, has leased adjoining property, 200 x 400 ft., formerly used by Walker Motor Co., for expansion. Headquarters are at 11631 Mack Avenue, Detroit.

John Harsch Bronze & Foundry Co., 11612 Madison Avenue, Cleveland, is contemplating a one-story plant unit on

West 121st Street, to cost about $65,000 with equipment.

B. F. Goodrich Co., Akron, Ohio, manufacturer of automobile tires, tubes, mechanical rubber goods, etc., has purchased plant and business of Hood Rubber Co., Watertown, Mass., and will consolidate. Hood company will maintain present name and will be operated as division of purchasing company.

Cream Cone Machine Co., 1874 East Fifty-ninth Street, Cleveland, has awarded general contract to Leslie Lapp, 2020 Brunswick Road, East Cleveland, for three-story addition, 60 x 65 ft., to cost about $60,000 with equipment. Jack Mohler is company architect.

Chicago

CHICAGO, Sept. 9.—Sales of machine tools easily measure up to the average week in August and fresh inquiry is more active than for some time. Gaged by requests for preliminary figures for budget preparation, the Santa Fe has in mind a large list for spring purchase. Among other railroads which are well along with future plans are the Northern Pacific and the Union Pacific. The Burlington has ordered two axle turning lathes, the Chicago, North Shore & Milwaukee has purchased several machine tools and the Chicago Rapid Transit has placed a boring mill.

Farmall division of the International Harvester Co. has closed that part of its list which called for special machinery and items on which deliveries were farthest extended. There still are a number of standard tools to be ordered. Continental Motors Corporation's list, which includes much special turning equipment and drills, is active. A local automobile parts maker has ordered two large special machines for turning rear axle housings. This order may be duplicated at an early date. Supplies of used tools are large.

Peoria Malleable Casting Co., Peoria, Ill., plans expenditure of $30,000 for an addition in which it will make malleable chain.

Kansas City Steel Foundry Corporation, Kansas City, Mo., will start operations in former plant of Kansas City Malleable Castings Corporation. Officers of company are John C. Smith, president; M. S. Murray, vice-president and treasurer, and E. Byron Gray, secretary.

Victor Products Corporation, 2633 Belmont Avenue, Chicago, will build a two-story addition, 50 x 125 ft. Cobb & Eisenberg, 123 West Madison Street, are architects.

Triner Scale & Mfg. Co., corner of Twenty-third Street and Fairfield Avenue, Chicago, has under construction a four-story and basement factory which will cost $250,000.

Variety Fire Door Co., Sacramento Avenue and Carroll Street, Chicago, has purchased former plant of Elgin Motor Co., Argo, Ill. Production will be underway in about thirty days in new plant.

H. Severin Mfg. Co., makers of special tools and dies, 4607 Ravenswood Avenue, Chicago, has purchased one-story factory of Holmes Electric Co., at 5116 Ravenswood Avenue, Chicago.

Solar-Sturges Mfg. Co., Bellwood, Ill., manufacturer of metal cans and containers, has awarded a general contract to Austin Co., Chicago, for one-story addition to plant at Melrose Park, Ill., to cost about $35,000 with equipment.

Chicago Air Service, Inc., operating Sky Harbor flying field, Glencoe district, Chicago, has leased six-story building at Eighteenth Street and South Michigan Avenue, for aircraft manufacturing plant and aviation school.

North Shore Foundry Co., North Chicago, Ill., care of John Rause, Jr., 442 North Butrick Street, Waukegan, Ill., recently formed by Mr. Rause and associates, is planning one-story foundry to cost close to $50,000, of which about $30,000 will be expended for equipment.

Standard Parts Corporation, 1020 La Salle Avenue, Minneapolis, Minn., has awarded general contract to James Leck Co., 211 South Eleventh Street, for one-story plant to manufacture automobile parts, to cost about $30,000 with equipment. Vanderbilt & Dege, 1645 Hennepin Avenue, are architects.

Iowa Railway & Light Co., Dows Building, Cedar Rapids, Iowa, has plans for a hydroelectric power house, near Rochester, Iowa, to cost about $125,000. Extensions will be made in transmission lines. Fargo Engineering Co., 226 West Main Street, Jackson, Mich., is engineer.

Ogden Phonograph Co., 3425 Ogden Avenue, Chicago, manufacturer of talking machines and parts, has plans for new one-story plant to cost about $50,000 with equipment. Joseph Cohen & Co., 160 North La Salle Street, are architects.

Otter Tail Power Co., Fergus Falls, Minn., plans extensions and improvements in steam-operated electric power plant at Langdon, N. D., including installation of additional equipment, to cost more than $70,000, including transmission line extensions.

Cincinnati

CINCINNATI, Sept. 9.—As a result of the Labor Day holiday, fresh bookings of district manufacturers of machine tools, the past week, were slightly below the level of the preceding week. Buyers show reluctance to close for new tools until after they have seen new models to be shown at the Cleveland exposition. Inquiry, however, is in good volume and indicates a steady flow of orders for one or two machines for some time.

Contract has been let by Inland Mfg. Co., Coleman Avenue, Dayton, Ohio, manufacturer of automobile equipment and accessories, to Hillsmith Co., Dayton, for one-story addition to cost about $500,000 with equipment.

Randall Co., West Court Street, Cincinnati, manufacturer of leather-working machinery, parts, etc., has disposed of a stock issue to total $780,000, part of proceeds to be used for expansion. Company is considering removing plant to another site where increase in output will be arranged.

Liberty Range Works, Inc., Nashville, Tenn., manufacturer of stoves, ranges, etc., will erect a new plant, consisting of one-story units to total 50 x 640 ft., to cost more than $230,000 with equipment.

Hauser-Stander Tank Co., Spring Grove and Ammenn Avenues, Cincinnati, is contemplating erection of new plant, to cost about $100,000 with equipment.

Gartland, Hoswell & Rentschler Foundry Co., East Herman Avenues, Dayton, Ohio, has awarded general contract to H. R. Bragg Co., Third Street, for extensions and improvements, including new cupola, to cost about $23,000.

Stumb Motor Co., 1408 Broad Street, Nashville, Tenn., has awarded general contract to Foster & Creighton, Fourth and First Bank Building, for three-story service, repair and garage building, 102 x 170 ft., to cost about $100,000 with equipment. Warfield & Keeble, Nashville Trust Building, are architects.

Edward Koehl, Sr., Reading, Ohio, will build one-story machine shop, to cost about $22,000 with equipment.

Hartzell Industries, Inc., Piqua, Ohio, manufacturer of propellers and kindred products, has awarded general contract to V. A. Pence, Piqua, for two one-story additions, 45 x 145 ft., and 30 x 250 ft., to cost about $70,000. First-noted will be used for manufacturing, and other for storage and distributing service.

Remley Boiler & Machine Works, 263 East Short Street, Lexington, Ky., has been organized and is operating plant making small boilers and doing a general machine jobbing business.

Deveny Tool Co., Dayton, Ohio, manufacturer of tools, dies, etc., recently organized, is operating in Norwood Power Building.

Milwaukee

MILWAUKEE, Sept. 9.—Pending business and inquiries indicate a volume of business this month as large as that in early summer. Improvement in deliveries has been slight, and sales of used equipment have greatly increased to fill gaps left by delayed shipments.

Jobbing shops and tool and die makers are as busy as at any time this year. Automobile manufacture has fallen off but truck manufacture is more than fair for the season, and makers of automotive parts have not felt any decline. Demand is opening strong for agricultural implements and power production and transmission machinery.

Milwaukee Electric Railway & Light Co., Milwaukee, will soon start construction of $4,200,000 addition to Lakeside steam generating plant at Cudahy. Boiler house unit costing $1,500,000 is nearing completion, and will be six stories.

E. P. Olsen Machine & Tool Works, 1437 Main Street, Marinette, Wis., will add equipment to manufacture an electric heater for warming automobile crank cases in cold garages, invented by J. L. LaVoy, Marinette.

Milwaukee Reliance Boiler Works, 1102 Thirty-second Street, Milwaukee, will remodel a building, 35 x 95 ft., for an addition. Selzer-Ornst Co., 192 Fourth Street, Milwaukee, are contractors.

Appleton Steel Tube Co., Appleton, Wis., contemplates purchase of additional heating and piercing equipment following an increase of capital stock from $100,000 to $250,000.

Moto-Meter Garage & Equipment Co., Long Island City, N. Y., is beginning construction of several additional buildings for recently acquired plant of National Gauge & Equipment Co., LaCrosse, and will remodel existing structure.

Northwestern Motor Co., Starr Avenue, Eau Claire, Wis., has let contract for one-story foundry addition, 42 x 125 ft., to Olson & Walker Co., Eau Claire.

Conrad Monroe Gear Co., 5125 Thirty-second Street, Milwaukee, has let contract to Charles F. Monroe Construction Co., local, for machine shop to cost about $20,000 with equipment.

Board of Vocational Education, Manitowoc, Wis., has let general contracts to Kasper Construction Co., Manitowoc, for two-story addition, 46 x 84 ft., to Washington Vocational School, to cost about $117,000 without equipment. R. F. Theke is secretary of board and William J. Raeuber, Manitowoc, is in charge.

E. Brielmaier & Sons Co., 425 East Water Street, Milwaukee, architect, has plans for four-story factory, 40 x 150 ft. Owner's name is withheld.

Wisconsin Axle Co., Oshkosh, Wis., is starting erection of an addition to its machine shop department which will enlarge its floor space about 25 per cent. Building will be used to house additional machine equipment and to increase assembly facilities.

Buffalo

BUFFALO, Sept. 9.—Contract has been let by Gaylord Brothers, 155 Gifford Street, Syracuse, N. Y., manufacturers of library equipment and supplies, magazine binders, etc., to Fellows & McGrath, 207 Fellows Avenue, for one-story addition to cost about $35,000 with equipment.

Trico Products Corporation, 817 Washington Street, Buffalo, manufacturer of windshield wipers and other automobile accessories, has plans for one-story branch plant, totaling about 20,000 sq. ft. floor space at Bridgeburg, Ont., to cost about $55,000 with equipment. It is understood that company will remove present assembling plant on Courtwright Street, Bridgeburg, to new location.

Empire Air Transport Co., Loew Building, Syracuse, N. Y., has awarded general contract to O'Brien Construction Co., 104 Madison Street, for aircraft school, with shop for mechanical work, two-stories, at Syracuse municipal airport at Amboy, to cost $60,000 with equipment. Gorland Latta is one of heads of company in charge.

Joseph G. Dickerson, 169 Vestal Avenue, Binghamton, N. Y., and associates have organized Kolb, Dickerson & Smith and plan early operation of local factory to manufacture and repair electrical machinery. Philip W. Smith, 6 Westerly Way, will be an official of new company.

Bresee Chevrolet Co., 300 West Willow Street, Syracuse, N. Y., representative for Chevrolet automobile, has plans drawn for two-story service, repair and garage building, to cost about $180,000 with equipment. M. J. DeAngelis, 49 East Avenue, Rochester, N. Y., is architect.

St. Louis

ST. LOUIS, Sept. 9.—Kansas City Car Co., Tenth and Cherry Streets, North Kansas City, Mo., has acquired local plant of Deckard Steel & Iron Co., for expansion for tank car repair works. Two or more one-story buildings will be erected and additional equipment installed, to cost more than $100,000. Company is a subsidiary of American Steel Car Co., Chicago. M. R. Groenwald is general manager.

Multiplex Faucet Co., 4325 Duncan Avenue, St. Louis, has awarded general contract to Wendel Shasserre, 5973 Wells Avenue, for one-story top addition to plant, 80 x 80 ft., to cost about $30,000 with equipment. William P. McMahon, Buder Building, is architect. J. J. Fitzgibbon is treasurer.

City Council, Columbia, Mo., has awarded general contract to Simon Construction Co., Guitar Building, for addition to municipal electric light and power plant, including improvements in present unit, to cost $70,000 with equipment. Burns & McDonnell Engineering Co., Interstate Building, Kansas City, Mo., is engineer.

Missouri Boiler & Sheet Iron Works, Inc., 908 South Twenty-third Street, St. Louis, has acquired property in immediate vicinity improved with one-story building, and will remodel for expansion.

Mitchell & Mitchell Mfg. Co., Fort Smith, Ark., manufacturer of metal hospital bedsteads, springs, metal stampings, etc., will rebuild part of plant recently destroyed by fire.

National Pigment & Chemical Co., 1 Sidney Street, St. Louis, has awarded general contract to Fruin-Colnon Contracting Co., Merchants-Laclede Building, for rebuilding mechanical dryer plant, one-story, 40 x 160 ft., at Cadet, Mo., recently destroyed by fire, to cost about $45,000.

American Smelting & Refining Co., Omaha, Neb., J. A. Betterton, president, has awarded general contract to Busk Construction Co., Sunderland Building, for two-story and basement storage and distributing plant, 40 x 115 ft., to cost about $50,000 with mechanical handling and other equipment. John and Allan McDonald, Standard Oil Building, are architects.

Home Fertilizer Co., Texarkana, Ark., manufacturer of commercial fertilizers, will merge with Farmers' Fertilizer Co., Conway, Ark., under first noted name. Plans are under way for plant near Conway, one-story, to cost about $65,000 with equipment. Company is also planning establishment of at least five additional such plants in different parts of State.

Gulf States

BIRMINGHAM, Sept. 9.—Peden Iron & Steel Co., Houston, Tex., has acquired assets of E. L. Wilson Hardware Co., Beaumont, Tex., with exception of real estate, and will consolidate. Mill supply and hardware business of Wilson company will be continued by new owner, and storage and distributing plants will be maintained at Houston and Beaumont. E. G. Edson, formerly president and general manager of Wilson company, and Virgil Keith, formerly vice-president, will become identified with Peden company, of which E. A. Peden is president, and D. D. Peden, vice-president and treasurer.

Continental Gin Co., Fourth Avenue South and Forty-sixth Street, Birmingham, manufacturer of cotton-ginning machinery and parts, has asked bids for a three-story addition for storage and distribution, to cost about $100,000 with equipment.

J. W. Ross, Jacksonville, Fla., operating eight ice-manufacturing and refrigerating plants in different parts of State, is planning erection of new electrically operated plant at Lake Wales, Fla., to cost about $175,000 with machinery.

Common Council, Farmersville, Tex., has approved plans for a municipal electric light and power plant, to cost about $40,000 with equipment.

Hardicke-Etter Co., Sherman, Tex., manufacturer of cotton-ginning machinery, mill supplies, etc., has plans for a one-story addition, to cost more than $30,000 with equipment.

City Council, Lafayette, La., Wilson J. Peck, trustee of public property, will receive bids until Sept. 20 for waterworks equipment, including deep-well with pump, wash water pump, pipe line extensions, 1,500,000-gal. filter plant and other equipment. J. B. McCrary Engineering Co., Atlanta, Ga., is engineer.

City Council, Abilene, Tex., has plans for municipal airport, to include hangar, repair shops and other units, to cost $100,000 with equipment. B. Russell Shaw Co., Inc., 810 Olive Street, St. Louis, is engineer.

Atkinson & Co., Inc., 823 Perdido Street, New Orleans, has approved construction of cotton compress plant at Southport, to cost about $200,000 with presses and other equipment.

A. C. Blount, Pensacola, Fla., is at head of project to construct a paper mill in this vicinity. A fund of $40,000 is being raised to purchase 70-acre tract on Bayou Chico for plant, to cost more than $1,500,000 with equipment.

Tidal Refining Co., Houston, Tex., operated by Tide Water Oil Co., 11 Broadway, New York, has plans for new oil refinery on 700-acre tract at Ingleside, to cost more than $2,000,000 with machinery. Edward Ellsberg is chief engineer.

Agee Corporation, Dallas, Tex., C. D. Agee, president and general manager, operating Acme Screen Co., 915 South Peak Street, Dallas, and Agee Screen Co., Fort Worth, Tex., is planning establishment of several branch plants for similar production in different parts of State. Company has recently increased capital to $100,000.

Board of Education, Hamlin, Tex., is considering installation of manual training equipment in two-story high school to cost about $125,000, for which bids are being received on general contract. Voelcker & Dixon, Perkins-Snider Building, Wichita Falls, Tex., are architects.

Hydraulic Equipment Corporation, Houston, Tex., has been organized to manufacture hydraulic pumps, hydraulic brake devices and other hydraulic equipment. Company is considering having products made by outside factory on contract basis. M. A. Beurlot is secretary-treasurer.

Indiana

INDIANAPOLIS, Sept. 9.—Northwestern Terminals Co., 226 Water Street, Evansville, has plans for new coal-handling and distributing plant, to cost about $100,000 with equipment. Installation will include screens, belt-conveyors, hoppers, chutes, motors and mechanical unloaders. Vonnegut, Bohn & Mueller, Indiana Trust Building, Indianapolis, are architects.

Board of Education, Indianapolis, has authorized a bond issue of $800,000 for new Irvington High School, to include manual training department. Bids will soon be asked on general contract. Charles W. Kern is president of board.

Capehart Automatic Phonograph Co., East Pontiac Street, Fort Wayne, manufacturer of talking machines and parts, will soon take bids for one-story addition, to cost about $35,000 with equipment. Charles R. Weatherhogg, 250 West Wayne Street, is architect.

City Airport Commission, Terre Haute, headed by Robert Prox and Dr. F. H. Jett, is arranging bond issue of $125,000 for municipal airport at Dresser field, which is to be purchased for such purpose. Plans will soon be drawn for hangars, repair shops, oil storage and other field units.

Tokheim Oil Tank & Pump Co., 1602

Wabash Avenue, Fort Wayne, Ind., manufacturer of gasoline pumps and equipment, has awarded general contract to Rump-Kintz Co., Medical Arts Building, for one-story addition, to cost about $100,000 with equipment. Pohlmeyer & Pohlmeyer, Central Building, are architects.

Removal of Columbia Metal Products Co. from Chicago to La Porte, following its purchase by Great Western Mfg. Co. of latter city, is being completed.

Madison Machine Co., Madison, has recently been taken over by William E. Clark.

Plant of Davis Foundry Co., Newcastle, recently damaged by fire with loss of $60,000, will be rebuilt and new equipment installed.

Canada

TORONTO, Sept. 9.—Machine tool sales developed more strength the past week and the interest shown by buyers indicates more extensive purchases. Small lists are appearing for replacement needs from automotive and railroad companies. Single tool buying is active and builders and dealers report a steady flow of orders.

Dominion Wheel & Foundry Co., Toronto, has applied for a permit to build a $60,000 machine shop. Company is erecting a large foundry.

General Motors Corporation of Canada, Oshawa, Ont., has awarded general contract to W. J. Trick Co. for an addition to McKinnon Industries plant at St. Catharines, Ont., to cost $175,000. Building, on which construction started Sept. 5, will be 136 x 425 ft., and is expected to be completed within 60 days. Plant will be used exclusively for manufacture of Delco-Remy starting and lighting equipment.

Superior Alloys, Ltd., has leased a site from Algoma Steel Corporation, Sault Ste. Marie, Ont., for erection of a plant to cost $75,000.

Steel Co. of Canada, Ltd., 525 Dominion Street, Lachine, Que., is receiving bids, no closing date set, for erection of an addition.

Western Canada

Plans are under way for rebuilding sodium sulphate plant of Bishopric & Lent Co., Cincinnati, at Mossbank, Sask., recently destroyed by fire.

Work will be started early next spring on improvements to Fort Rouge yards of Canadian National Railways at Winnipeg, Man. Plans call for new shops, roundhouse and extension of yards, to cost between $3,000,000 and $4,000,000.

Barry Sheet Metals Works, 10171 Seventeenth Avenue, Calgary, Alberta, has let contract to J. J. Doyle for an addition.

Pacific Coast

SAN FRANCISCO, Sept. 5.—Bids will be asked at once by S. & W. Lawn Sprinkler Co., 2308 West Washington Street, Los Angeles, for one-story addition, to cost about $24,000 with equipment. Edward L. DiVall Co., 3406 West Washington Street, is architect.

Pickwick Corporation, Los Angeles, has work under way on a new plant in El Segundo district for manufacture of automobile buses, known as nitecoaches, used by its subsidiary, Nitecoach Co., including departments for parts production and assembling, to cost $150,000 with equipment.

Board of Education, Long Beach, Cal., has authorized purchase of 67 lots in Willow Park district as site for new senior and junior vocational high school, to cost more than $500,000 with equipment.

Universal Engineering Co., Los Angeles, manufacturer of mechanical specialties, has plans by Austin Co. for one-story addition to plant at 2369 East Fifty-first Street, to cost about $30,000 with equipment.

United States Metal Products Co., 330 Tenth Street, San Francisco, will erect a new one and two-story plant, 200 x 380 ft., to cost about $120,000 with equipment. Ellison & Russell, Pacific Building, are architects and engineers.

Port of Portland Commission, Spalding Building, Portland, will soon begin construction of two hangars at Swan Island airport, with machine and repair shop facilities, to cost more than $90,000 with equipment. Other field structures will also be erected. James H. Polhemus is manager.

Willapa Pulp & Paper Mills, Inc., Pacific Building, Portland, is contemplating construction of a new mill near present works at South Bend, Wash., to cost more than $1,000,000 with equipment.

Aircraft Plywood, Inc., First National Bank Building, Seattle, will soon break ground for new one-story plant, 60 x 560 ft., to manufacture aircraft specialties, for which general contract recently was let to Austin Co. A steam power plant also will be built. Entire project will cost about $125,000 with equipment.

Allison Steel Mfg. Co., Phoenix, Ariz., is planning erection of a one-story plant to cost over $125,000 with equipment.

Foreign

OFFICIALS of Bucyrus-Erie Co., South Milwaukee, Wis., manufacturer of excavating and other construction machinery, and Ruston & Hornsby, Ltd., Lincoln, England, manufacturer of oil engines and kindred equipment, have organized Ruston-Bucyrus, Ltd., to establish a plant in England for manufacture of excavating machinery, etc. It is understood that works will be ready for production by close of year.

Southwestern Power Co., a subsidiary of Mexican Light & Power Co., Gante Street, Mexico City, is completing construction of power dam on Lerma River, near Tepuxtepec, State of Michoacan, to impound 500,000,000 cu. meters of water for hydroelectric power service. Work will proceed on initial power station to develop a capacity of 60,000 hp. Later another unit will be installed to increase output to 90,000 hp. Project will include construction of transmission lines and is part of proposed hydroelectric power development of company, for which an appropriation of about 20,000,000 pesos (approximately $10,000,000) has been made. Headquarters of parent organization are at 357 Bay Street, Toronto, Ont.

Government of Mexico, Mexico City, has concluded arrangements with Mexican Aviation Commission for central airport for city, to include construction of metal hangar, 120 x 120 ft., repair and reconditioning shop, 20 x 120 ft., and other field units, to cost 400,000 pesos (about $200,000).

Goodyear Tire & Rubber Co., Akron, Ohio, is arranging for purchase of site in Argentina for plant to manufacture automobile tires, tubes and other rubber goods, initial unit to cost more than $400,000. P. W. Litchfield, president, has left for trip to South America to arrange for project.

New Trade Publications

Tools for Hardware and Marine Trades. Leetonia Tool Co., Leetonia, Ohio. Catalog No. 928 consists of 18 pages describing the company's tools manufactured for the hardware and marine trades. On the last page is a comprehensive index of products.

Centrifugal Pump. Duriron Co., Inc., Dayton, Ohio. Duriron centrifugal pump No. 614 is described in bulletin No. 153, which shows the assembly drawing and gives a list of parts. The last page is devoted to reproductions of three rating charts telling of the performance of the pumps.

Oil Circuit Breakers. Westinghouse Electric & Mfg. Co., East Pittsburgh. A new four-page booklet describes types F-24 and F-24-R oil circuit breakers for medium interrupting capacity usage. Different methods of mounting the breakers and their construction are outlined. Tables are provided covering the closing and tripping currents for solenoid and motor mechanism, interrupting capacities, shipping weights, mounting details and the various accessories and attachments.

Electric, Oil and Salt Baths. Despatch Oven Co., Minneapolis, Minn. A bulletin featuring a new line of electric, oil and salt baths.

Alloy Cast Iron.—International Nickel Co., New York. Bulletins No. 201-a and No. 207, which are both illustrated, are entitled "An Introduction to Nickel Cast Iron" and "Properties and Applications of Nickel and Nickel-Chromium Cast Iron," respectively. The first is a leaflet of four pages and the second, one of 12. The former discusses the metallurgy of the production of nickel cast iron and the second treats of the applications of this alloy product in the aeronautical, the automotive, the general machinery and the machine tool industries, as well as their use in power plants by railroads and general users.

Electric Furnaces.—Hevi Duty Electric Co., Milwaukee. Bulletin 629, of four pages, illustrated, is entitled "The Electric Furnace in St. Louis." It describes some installations in various plants in that city.

Alloy Steel.—Joseph T. Ryerson & Son, Inc., Chicago. A four-page illustrated bulletin, entitled "Nikrome," describes a heat-treated alloy steel of guaranteed physical properties. It is said to be especially suited for the more difficult and heavy-duty industrial uses, particularly by such companies as do not maintain a heat-treating department of their own because this product comes already heat-treated to guaranteed physical properties.

Steel Castings.—Sivyer Steel Casting Co., Milwaukee. Bulletin No. 11 of four pages, illustrated, describes "New Economics of Buying Castings." It discusses in particular a sand mill pinion made of Sivyer chrome-nickel steel, and an Ingersoll milling machine in which Sivyer alloy and special carbon steel castings are incorporated.